REPORT RESUMES

ED 003 731 64
TELEVISION FOR TEACHERS IN SERVICE.
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PUERTO RICO UNIV., RIO PIEDRAS
REPORT NUMBER NDEA-VIIB-074 PUB DATE 30 APR 61
EDRS PRICE MF-$0.18 HC-$4.96 124P.

DESCRIPTORS- *SURVEYS, *TELEVISION SURVEYS, *EDUCATIONAL TELEVISION, *TEACHER EDUCATION, *INSERVICE TEACHER EDUCATION, MASS MEDIA, TELEVISED INSTRUCTION, BROADCAST TELEVISION, RIO PIEDRAS, PUERTO RICO

A SURVEY WAS ORGANIZED AND CONDUCTED TO DETERMINE THE FEASIBILITY AND DESIRABILITY OF USING TELEVISION FOR INSERVICE TEACHER EDUCATION PROGRAMS IN PUERTO RICO. VARIOUS QUESTIONNAIRES WERE CONSTRUCTED AND SENT TO TEACHERS AND EDUCATIONAL SUPERVISORS THROUGHOUT PUERTO RICO. GROUP MEETINGS WERE HELD WITH SCHOOL SUPERINTENDENTS IN STRATEGIC AREAS TO OFFER ORIENTATION IN THE SURVEY OBJECTIVES. FINDINGS EMPHASIZED AN URGENT NEED OF INCREASING FACILITIES AND RESOURCES FOR THE EDUCATION OF TEACHERS IN SERVICE. NO PROBLEMS WERE ANTICIPATED IN REGARD TO SECURING NECESSARY PERSONNEL, TECHNICAL EQUIPMENT, OR BROADCASTING TIME FOR ESTABLISHING SUBJECT EDUCATIONAL PROGRAMS IN MOST AREAS. RECOMMENDATIONS FOR FUTURE IMPLEMENTING ACTION WERE OUTLINED IN DETAIL. (JH)

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B-074

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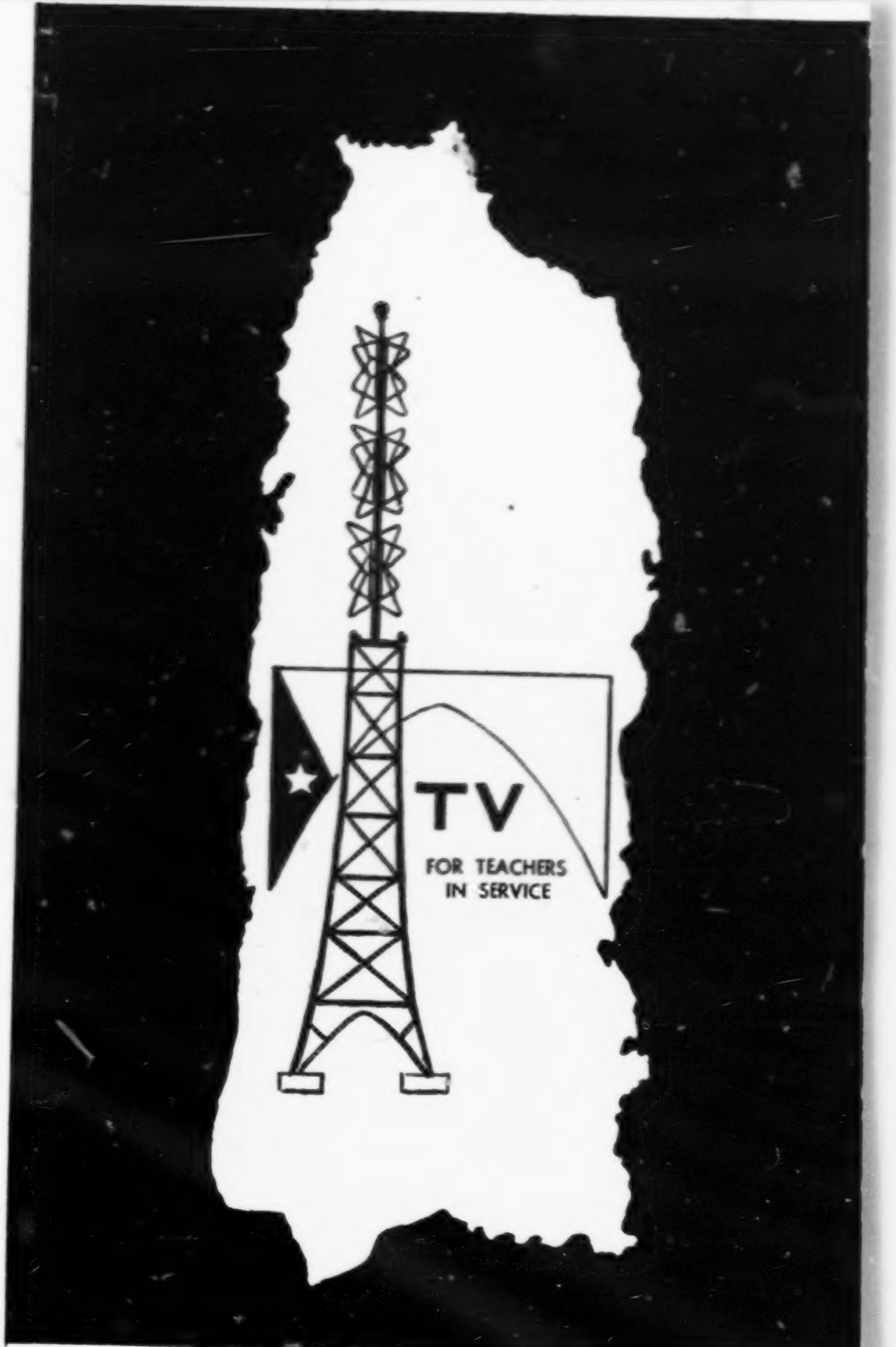

Oscar Loubriel
editor

a report on a survey to determine the feasibility and desirability of using television as an instrument for the education of teachers in service in Puerto Rico,

the college of education of the
university of Puerto Rico
in cooperation with the
U. S. department of health, education and welfare,
office of education
April 30, 1961

the survey reported herein was pursuant to a
contract with the United States Office of
Education, Department of Health, Education
and Welfare, Washington, D. C.

television for teachers in service

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television for teachers in service

a report on a survey to determine the feasibility and desirability of using television as an instrument for the education of teachers in service in Puerto Rico

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preface

Educators have become increasingly concerned with the scarcity of fully qualified teachers in active service in the schools of Puerto Rico, and with the present lack of adequate facilities to remedy this serious situation. Although various means have been proposed in the past, none has been able to fully meet or remedy this problem.

Dr. Aida A. de Vergne, Assistant Dean of the College of Education, cognizant of this predicament, in a communication to Dr. Augusto Bobonis, Dean of the College of Education, dated March 31, 1959, proposed that this College study the possibilities of offering televised educational programs, either with or without college credit, as part of the in-service education of teachers. (See Appendix No. 1.) She felt that such programs could be economically and efficiently produced and could reach and adequately prepare more teachers, in less time, than other means heretofore proposed or attenpted.

Her proposal was discussed with Hollis L. Caswell, Florence Stratemeyer and Paul Witt, of Teachers College, Columbia University, and Harold E. Wigren, Educational Television Consultant of the NEA, who were unanimously in accord with regard to the desirability of exploring the possibilities of offering professional televised courses to teachers in active service.

Dr. Vergne's proposal received the complete acceptance and support of Dr. Augusto Bobonis, and as a result, Dr. Harold E. Wigren and Dr. Walter Stone, of the Office of Education, Washington, D.C., were invited to come to the University of Puerto Rico in order to express their ideas personally and to make recommendations based on their wide experience in this area. The ultimate aim of the project would be to establish organized educational televised programs as part of the education of teachers in service. Dr. Stone proposed that the project should proceed according to the following three stages:

Stage I - The determination, by means of a systematic study, of the feasibility and desirability of using television as an instrument for the in-service education of teachers.

Stage II - The carrying out of a period of experimentation with educational TV programs with a carefully selected control group, providing that the results obtained from the initial stage indicate that educational TV programs are both feasible and desirable. The experimental phases of the project will be aimed at providing the necessary experience for the ultimate extension of organized educational TV programs throughout the island.

Stage III - The organization and installation of organized educational TV programs.

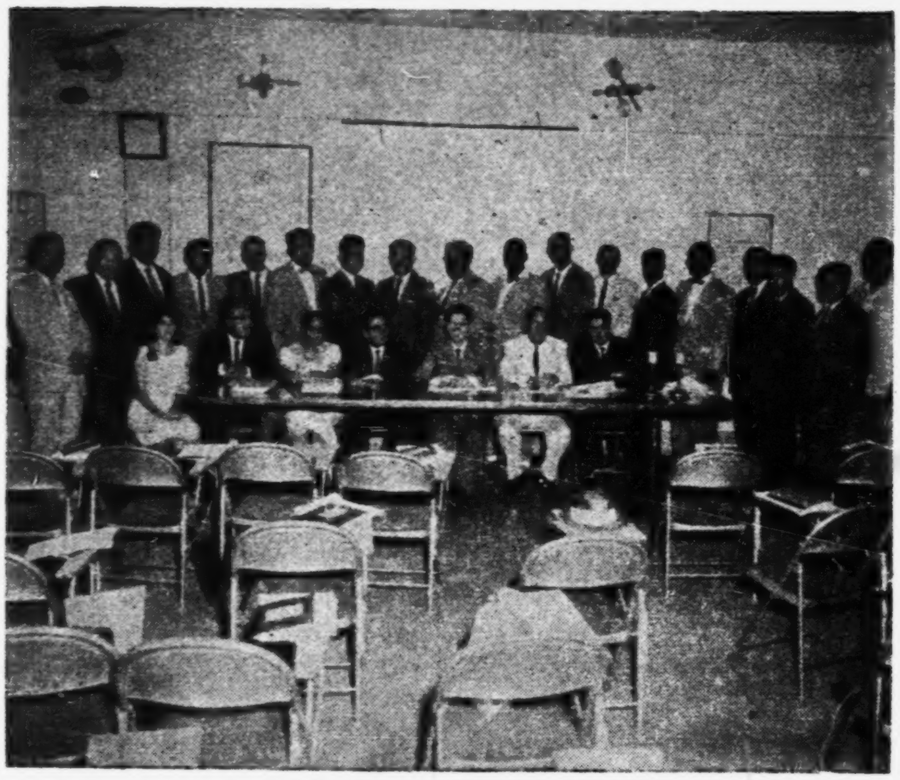
He also suggested that steps should be taken so that the first stage of the project could be sponsored by the Department of Health, Education and Welfare, Washington, D. C.

Bearing in mind Doctor Stone's suggestions, it was decided that for the present time the College of Education would assume the responsibilities of, and dedicate its effort to the first stage of the project, only. Thus, a proposal to carry out a survey under a contract authorized by Public Law 85-864, Title 7, Part B, was prepared and forwarded to the Office of Education, Department of Health, Education and Welfare, Washington, D. C. This proposal was approved, and work commenced on August 1, 1960. A project staff which consisted of the Director, Dr. Oscar Loubriel, Assistant Director, Dr. Roberto Morán, and Secretary, Mrs. Mary Quiles; and an advisory committee composed of Dr. Bobonis, Dr. Vergne, and Mr. Roberto Estrella of the University of Puerto Rico and Mr. Rafael Ramírez and Mr. Eulalio Torres, of the Department of Education, were appointed.

In order to carry out successfully a survey of this nature, the whole-hearted cooperation of the Department of Education was indispensable. Thus, the Secretary of Education, the Hon. Cándido Oliveras, was approached, and in a series of meetings with the Dean and the Director of the project, agreed that the idea was feasible and that the results of such a survey would be valuable to all persons concerned with improving the quality of teaching in the schools of Puerto Rico. He immediately promised the complete cooperation of the Central Office, authorized the sending of questionnaires to, and the holding of meetings with teachers, supervisors and school superintendents; and appointed a committee of eleven members from among the personnel of the Department of Education. The main task of this committee would be to serve as liaison between the Department and the College. It would also act in an advisory position making the necessary recommendations which would facilitate the successful realization of this survey.

As a considerable amount of the preparation for initiating a survey of this type involved specialized technical knowledge of TV, it was decided to obtain the services of a person with experience in this area. Thus, Dr. Herbert Schueler, Director of Teacher Education, Hunter College, New York, was appointed consultant to the project and he worked in close coordination with the members of the project staff.

The initial task was the preparation of a research design which would serve as a guide in carrying out the survey. (See appendix No. 2.) In keeping with this design, various questionnaires were constructed and sent out to teachers and supervisors throughout the island. (See Appendix No. 3.) Group meetings conducted by the project director were held with school superintendents, in strategic points of the island, to offer orientation as to the objectives of the survey.



a meeting of superintendents

As can be seen in the research design, the activities planned and carried out were mainly oriented and directed towards gathering data relevant to the two principal aspects of the survey, i.e., the feasibility and desirability of establishing televised educational programs for teachers in service.

A full description of all the various activities carried out, research instruments constructed, the results obtained and the recommendations made by the staff, are presented in the following pages of this report.

acknowledgments

The readers of this report will undoubtedly understand that the survey herein described represents the cooperative efforts of a large number of dedicated persons. We wish to extend our most sincere gratitude to the following persons and agencies.

The United States Office of Education, Department of Health, Education and Welfare offered economic assistance and agreed to compensate the University of Puerto Rico for expenses incurred in carrying out this survey.

Dr. Augusto Bobonis, Dean of the College of Education of the University of Puerto Rico, not only made valuable suggestions but also contributed by his active participation in the project. Dr. Aida A. Vergne, the Assistant Dean, was largely responsible for the formative stages of the proposal to carry out the project.

The Hon. Cándido Oliveras, Secretary of Education of Puerto Rico, gave his most decided support to the project and provided the means for obtaining the cooperation of Department of Education personnel.

For their useful advice and cooperation, we offer thanks to the following members of the advisory committee: Mr. Eulalio Torres, Assistant to the Secretary of Education; Mr. Rafael Ramírez, Coordinator of Radio and Television Educational Programs of the Department of Education; and Mr. Roberto Estrella, Acting Director of the Audiovisual Center of the University.

We were fortunate in having consulting services of Dr. Walter Stone, Office of Education, Washington, D. C.; Dr. Harold E. Wigren, Educational Television Consultant of NEA, who assisted us in the initial planning of the project, and Dr. Herbert Schueler, Director of Teacher Education, Hunter College of New York City, who has offered his invaluable assistance throughout the survey. Mr. Rafael Delgado Márquez, General Administrator of Radio and Television of the Government of Puerto Rico has also contributed to our task with his sound recommendations and judicious advice. To all these persons we are indebted.

Our sincere thanks also to all the professors, supervisors, and teachers of the public school system who willingly answered our questionnaires or gave us useful advice.

.... to Miss Laura Gallego;

.... to Mrs. Angelita S. Richardson and her colleagues;

.... to Miss Angeles Pastor;

.... to Mr. Ralph F. Robinett and members of the Division of English in the Department of Education;

.... to Mr. Rafael Arce;

.... to Miss Silvia (3) Silva;

.... to Mrs. Luz M. Torruellas;

.... to Miss Herminia Vázquez.

To our secretary, Mrs. Mary Quiles, who in spite of illness continued working deligently in order that we might complete our report on time, we would like to express our sincere appreciation.

The project Staff
Oscar Loubriel, Director
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chapter one

the desirability of using television as an instrument for the education of teachers in service

advantages and reasons

The advent of any new system of communication brings with it the dissemination of ideas and information to greater numbers over more widespread areas. As in the past, the written word, the invention of printing, and the innovations of motion pictures and radio assisted in transmitting educational material; so, in the past decade television has come to the fore as a potential force in education, with, no doubt, a great future in store. Even now in the comparatively early stages of experimentation with educational television programs, many advantages of its use are becoming apparent, and it is taking its place in fulfilling a number of present day needs for which it might otherwise have been difficult to find satisfaction. Television is a new medium, not a mere audio-visual aid, and if used with creativity and regard for high quality of instruction, it may take its place among the traditional media of education.

In the United States the use of television in education has greatly expanded since the tentative beginnings around 1953 when the Pittsburg school system became one of the first to televise programs for direct use in the classroom.[1*] Wide experimentation has taken place since that time as can be seen by a perusal of the many pamphlets, reports, and bulletins printed by colleges, universities and state education systems which are at present using, and plan to initiate increasing number and more varied types of programs through the television medium in education. From these reports much evidence is accumulating as to the unique advantages that television has in dealing with some of present day problems in education. Nevertheless, the need for further research is always stressed.

As regards the present study of the feasibility and desirability of the use of television for the in-service education of teachers in Puerto Rico, the most outstanding reason for the future use of this medium in this specific area of education is the serious scarcity of properly trained teachers in the public school system[2]. For, not only does the public school system suffer from this lack of fully trained personnel, but evidently there is also a shortage of university professors to teach extension courses, the means by which many teachers attempt to complete their training. Meanwhile, the ever-present problem becomes increasingly serious as, concurrent with the teacher shortage, school enrollment continually increases.

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* *Numbers refer to bibliography references at the end of this chapter.*

Apart from the pressing need of teachers in service to complete their preparation by taking credit courses, there are also a necessity and desire for non-credit courses, to further the professional growth of already qualified teachers. For, many teachers in service, whether qualified or still working towards the completion of their academic preparation, continually strive to keep abreast of new material in their fields, especially in science.

There is also a need to improve teaching methods and demonstrate their application in the classroom. This is conventionally done by demonstration classes. However, difficulties frequently encountered on giving these classes, such as conflicts in teachers' schedules and inconveniences in traveling, could be overcome by television. Thus we find that, although the most apparent reason for initiating televised programs of credit and non-credit courses for in-service teacher education is the serious teacher shortage, the use of television in this area can also be justified as an appropriate and effective means of aiding good teaching and of focusing attention upon superior instruction.

Television, being in many ways a unique medium, brings to the field of education a variety of new possibilities made available by the skillful use of the cameras. Many of these advantages have already become apparent and further experimentation will no doubt reveal others. As here we are primarily concerned with its use for in-service teacher education, we will not cover the full scope of the advantages of television techniques in the education field as a whole, but mention only those that seem particularly relevant.

The two most obvious advantages of television instruction are: that a telecast can reach large numbers over a wide area, and that the best available professors or other talent can participate in the giving of televised classes, thereby multiplying the effectiveness of competent teaching by extending the reach of the country's best teachers. Other advantages should be that teachers either taking televised courses for college credit or viewing others for their professional growth, can do so in their own homes or in groups at a neighborhood school where television facilities are available. After the program they would meet locally with a coordinator for group discussions, questions, quizzes, etc., thus eliminating the financial burden of traveling to the university and time scheduling difficulties inherent in attempting to study while being fully employed.

By using television, courses can be presented for which there is no local teacher available. In language classes native speakers of high academic standing can offer the example of the best language usage and pronunciation to teachers who heretofore may have had very little actual contact with the correct spoken word of the language they are called upon to teach. Television can bring to student teachers educational experiences otherwise not readily available: community problems, world events, field trips, and activities that might be considered dangerous can all be brought to the classroom with great realism.

In studies carried out in the United States it was found that the increase of visual material was generally welcome[3]. It is claimed that television courses are usually more carefully planned than conventional ones, the accent being on quality[4]. It is also felt that the combination of the skills of the studio teacher and the class teacher or coordinator makes possible a cooperative teaching effort better than either could achieve alone.[5] Another point raised in the reports is the claim that through the camera lens, the studio teacher looks directly into the eyes of the viewer, causing him to give closer attention to the lesson.[6] Every viewer gets close-ups of the instructor and his presentation of material thus enchancing concentration on the subject matter.[7] The visual materials used in conventional lessons are not eliminated; on the contrary, television provides new ways in which they can be used. Moreover, the magnifying power of the camera can make details of any material or experiment visible to all students. All these, and other advantages are applicable to both types of course, credit and non-credit.

Teachers in service particularly can benefit from learning new techniques by observation, viewing demonstration classes as a whole, individual students at work and the class teacher from close quarters. Kinescope records of observation classes can be made for subsequent criticism and discussion.[8]

Various United States colleges and Education Departments are at present using television (both open and closed circuit) for in-service education. With open circuit—the system which is recommended to be used in Puerto Rico—San Francisco State College, the University of Detroit and others transmit courses over education television stations, students view at home and come to the campus for discussions.[9] Other colleges require students to come to the campus only for registration and the final examination, while yet others use a correspondence course approach, having students mail assignments based on television lectures.[10]

Experiments have been carried out in an attempt to measure the effectiveness of courses presented by television, and results reveal that the quality of work done by students completing the courses is comparable to that of conventional classroom work.[11] However, most researchers agree that more experimentation is needed before they can reliably determine which courses are best adapted to television.[12] One point greatly stressed in most reports is the need for cooperation and team work between television instructors and class teachers or coordinators, so that students may gain optimum benefit from televised courses.

The criticism of television education courses most often raised originates from the fact that television is a one-way medium, depriving the viewer of personal contact with the teacher and the opportunity to ask questions as they arise during class. It was thought also that learning by means of television would become a passive experience.[13] However, these points need not present an obstacle to effective learning. Careful planning and creative application result in challenging activities and real involvement of the learner.[14] Cooperation between the television instructor and coordinator helps to bridge the gap between the former and the viewers, and careful preparation of television materials can anticipate and answer most questions that may arise in a student's mind during class,[15] while other questions can be discussed with the coordinator and other students. However, great importance is attached to the quality of the television instructor and his screen personality, as mediocrity is emphasized by the close-up realistic effect of the television medium.

In the implementation of any television education program many problems of a minor character arise, among which some are relevant to in-service teacher education. Open circuit presents difficulties of time scheduling. As the teachers following the courses will be working in school during the daytime, consideration and care is needed in planning the times of the various courses to be offered in order to enable the greatest number to benefit therefrom. The problem of how to interest the very best professors in using the television medium is apparently a great preoccupation at the college level in the United States,[16] and may possibly prove to be so in Puerto Rico also. The respective roles of the studio teacher and the coordinator need to be defined to avoid friction and to stimulate the utmost cooperation to permit these teams to function with the greatest efficacy.

Finally there is a great need to gain acceptance for educational television among the general public and the teaching profession alike, in order to dispel such falacies as the fear of a future redundancy of teachers, and to refute such thoughtless criticisms and exaggerated statements as the contention that an electronic tube cannot understand the student, or that the television screen can become the final triumph of machine over man. By familiarization with the medium many doubts can be dispelled, as experience has shown that the main source of opposition to educational television among the teaching profession in the United States came from teachers who had no experience with it. Those who had used it were generally found to be very enthusiastic in its favor.

Thus, it would appear from our investigation, carried out through consultations and reading of available literature, that the already proven advantages of television as an educational medium would contribute greatly to the solution of some of the most pressing problems in the field of teacher education in Puerto Rico today. The full benefit, however cannot be reaped without much careful planning and cooperation, and the acceptance of the medium as a great potential, not only for meeting immediate problems, but in the future of education as a whole.

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12. The Ford Foundation. *op. cit.* p. 22.

13. *Ibid.* p. 20.

14. United States Department of Health, Education and Welfare, Office of Education. *Proceedings of Conference on Educational Television.* Washington, D. C. May 26-28, 1958. p. 2.

15. *Ibid.* p. 76.

16. The Ford Foundation. *op. cit.* p. 14.

chapter two

the desirability of using television as an instrument for the education of teachers in service

teachers in need of additional education

It is the purpose of this chapter to present the actual situation in Puerto Rico with regard to the teachers' need for additional academic and professional education. In presenting the facts gathered by our investigation we aim to demonstrate the magnitude of the need, so that all persons concerned may see the necessity of providing and increasing all kinds of facilities and resources to enable teachers to better their academic and professional preparation.

In this chapter we present tables illustrating the findings and our interpretation of the present academic and professional preparation of the teachers in Puerto Rico. The data on which we based our interpretation were obtained from the returns of a questionnaire (See appendix no. 3) sent to all public teaching personnel (including supervisors, directors and teachers) in all types of school curriculum work. The interpretation of the data was based on the following criteria:

1. All teachers must have a solid preparation in general studies and liberal arts, as well as be professionally competent. This preparation, academic and professional, even for the elementary school teachers, requires not less than four years of college education.

2. A two-year program of college studies represents incomplete academic and professional preparation for teachers, even for those teaching in the elementary schools. (We are aware of the fact that according to the laws and regulations in Puerto Rico a person with a Normal Diploma—a two year college course—is entitled to receive certification as an elementary school teacher. We, however, do not consider that persons with only such preparation are fully prepared to do satisfactory teaching work in the schools.)

3. There must be an appropriate balance in teachers' academic and professional preparation, but they must also have a sound preparation in those special areas in which they are supposed to teach or supervise.

According to these criteria we decided to classify supervisors and teachers into two groups: (1) fully prepared, and (2) not fully prepared. As regards supervisors, we classified as fully prepared all those having anyone of the following types of preparation: doctor's or M.A. degree, specialized in school supervision; M.A. and a professional diploma or certificate in school supervision; bachelor's degree and a professional diploma or certificate in supervision. Secondary-school teachers, classified as being fully prepared, were those with a bachelor's degree including adequate special preparation in the subject which they teach and in professional courses. In the case of elementary school teachers, all those having a bachelor's degree specialized in education were considered fully prepared.

From an analysis of the data included in the following tables we can draw the following conclusions: (1) that more than half (56.3 per cent) of the supervisors are in need of receiving further academic and professional preparation; (2) that more than three fifths of the secondary school teachers (60.6 per cent) need to receive more education either in their

TABLE NO. I

ACADEMIC AND PROFESSIONAL PREPARATION OF THE TEACHERS[1]

	Total No. of replies received	Regular or Provisional and percent		PREPARATION	
		R	P	Fully-Prepared and percent	Not fully prepared and percent
Supervisors[2]	673	616 91.5%	57 8.5%	294 43.7%	379 56.3%
Secondary School Teachers	4,901	2646 54.0%	2255 46.0%	1933 39.4%	2968 60.6%
Elementary School Teachers	7,169	6166 86.0%	1003 14.0%	1730 24.2%	5439 75.8%
TOTALS Percent	12,743	9428 74.0%	3315 26.0%	3957 31.0%	8786 69.0%

1. This table has been prepared with data collected in January, 1961.
2. Includes all types of supervisors: general supervisors, zone supervisors, superintendents of schools and their assistants, director of schools and their assistants, etc.

TABLE NO. II

CLASSIFICATION OF SUPERVISORS
Regular or Provisional,
College preparation, Years of experience

January 31, 1961

Total no. of replies received	673*
With REGULAR certificate	666
With PROVISIONAL certificate	7

College preparation:

Doctor's degree	6
M. A. and professional diploma or certificate	128
M. A.	110
B. A. or B. S. and professional diploma or certificate	160
Normal diploma	11
Less than Normal diploma	2

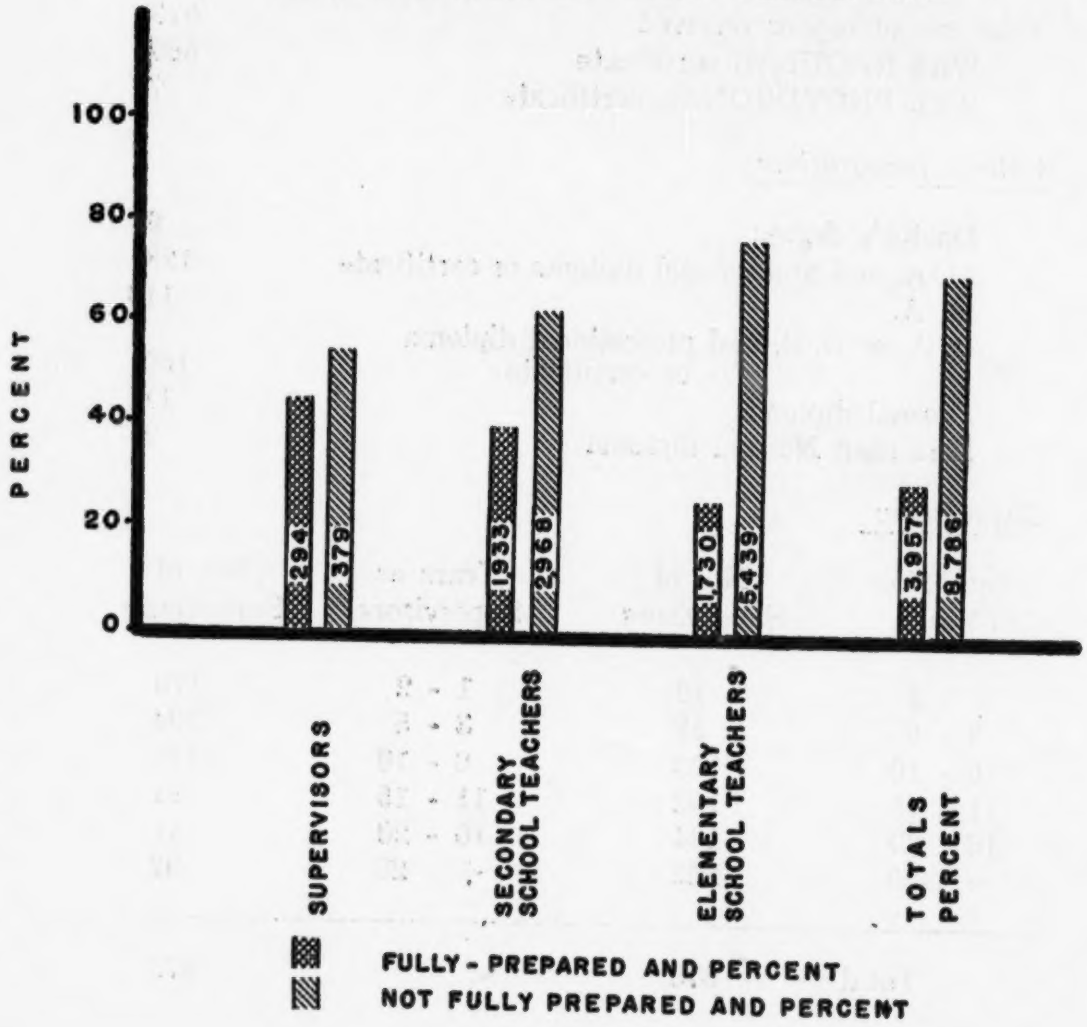
Experience:

Total No. of Years	No. of Supervisors	Years as Supervisors	No. of Supervisors
1 - 2	13	1 - 2	179
3 - 5	19	3 - 5	204
6 - 10	123	6 - 10	136
11 - 15	132	11 - 15	81
16 - 20	134	16 - 20	41
+ 20	252	+ 20	32
Total	673		673

---

* Out of 1,153 supervisors only 673 responded. Includes all types of supervisors: general supervisors, zone supervisors, superintendents of schools and their assistants, director of schools and their assistants, etc.

ACADEMIC AND PROFESSIONAL PREPARATION OF THE TEACHERS



general preparation or in their specialty; (3) that more than three fourths (75.8 per cent) of the elementary school teachers do not have the full academic or professional preparation needed to guarantee optimum quality teaching for the children attending public elementary schools. Of the elementary school teachers about fourteen per cent are provisional with less than Normal Diploma. We need hardly emphasize the magnitude of the problem and the urgent need of increasing the facilities and resources for the in-service education of teachers.

Experience in the teaching profession is an important factor which must also be taken into consideration when ascertaining the general preparation of teachers. Thus, we agreed that the professional education of teachers must be based on an adequate balance between theory and experience. In other words, it is accepted that teachers benefit from their experience in the school situation. We are thus sure that some of the teachers who, according to our interpretation are not fully prepared, have indeed accomplished good work because of their long and profitable experience. However, as we can see by the data in table III on the following page, the great majority of the teaching force has not had a sufficient number of years experience in the profession to help compensate for inadequate preparation.

From an analysis of the table we can reach the following conclusions: that more than two-fifths of all teachers (43.3%) have five or fewer years of experience in the profession; that more than half (53.5%) have been only five or fewer years in their present jobs, and that those having one to two years experience in their present job represent more than one fourth (27.2%) of the total teaching force.

The reliability of the statistics presented in the forementioned tables may be appreciated by comparing the figures with those of Table D-1 (Classification of the Academic Personnel of the Public Schools of Puerto Rico), D-2 (Classification of Elementary School Teachers), D-3 (Classification of Secondary School Teachers), D-4 (Classification of Supervisors), which appear in the appendix, and which were taken from a report of the Department of Education of Puerto Rico issued in October 1960.

The situation which these data reveal is indeed a serious one which calls for the utmost effort and cooperation for its amelioration. Undoubtedly, the government and the universities are well aware of and greatly concerned with the problem and are working towards its solution. An example of this concern can be seen, with regard to the preparation of mathematics teachers, in a memorandum submitted to the Secretary of Edu-

TABLE NO. III

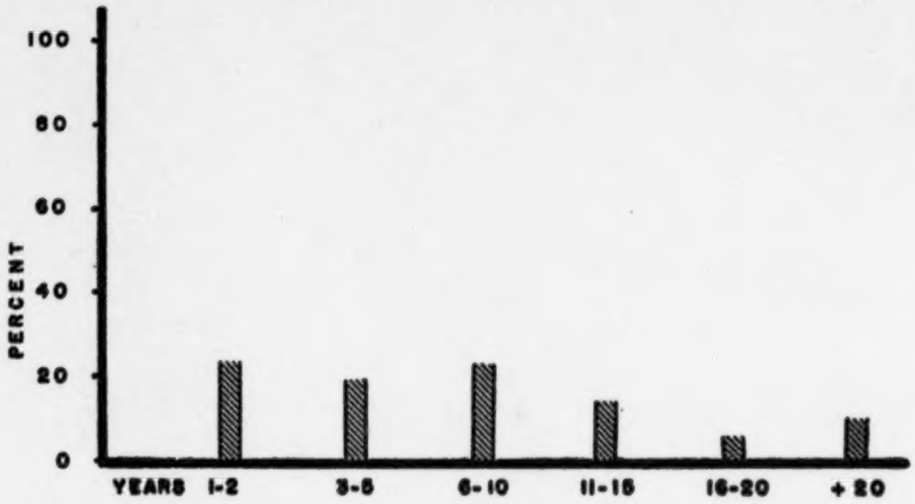
NUMBER OF YEARS WORKED BY TEACHERS
(January 31, 1961.)

No. of Years of Experience	Number of Teachers	Percentage of Teachers
1 - 2	3,043	23.9%
3 - 5	2,456	19.4%
6 - 10	2,899	22.8%
11 - 15	1,885	14.8%
16 - 20	978	7.5%
+ 20	1,482	11.6%
Total	12,743	100.0%

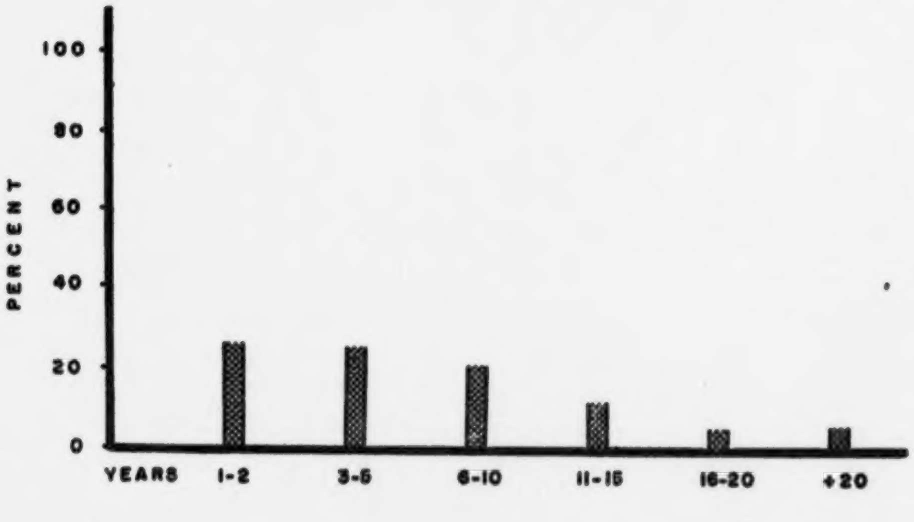
Number of Teachers and years they have been working in their present type of position

No. of Years of Experience	Number of Teachers	Percentage of Teachers
1 - 2	3,469	27.2%
3 - 5	3,351	26.3%
6 - 10	2,722	21.3%
11 - 15	1,588	12.5%
16 - 20	744	6.1%
+ 20	839	6.6%
Total	12,743	100.0%

NUMBER OF YEARS WORKED BY TEACHERS



NUMBER OF TEACHERS AND THE NUMBER OF YEARS THEY HAVE BEEN WORKING IN THEIR PRESENT TYPE OF POSITION



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cation in January 1960. This memorandum points out that although the number of teachers without credits in mathematics has decreased somewhat during the last two years, due to programs of in-service teacher education in the various colleges and universities of Puerto Rico, there are still a significant number of not fully qualified mathematics teachers in both the junior and senior high schools.

However, increasing school enrollments coupled with the limitation of present facilities for in-service teacher education, present great difficulties to those attempting to improve the present situation. Thus, it would seem that televised education credit courses for teachers in service have much to offer towards the solution of this problem.

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chapter three

the desirability of using television as an instrument for the education of teachers in service

the need of non-credit televised programs

Although the principal objective of the present survey is to determine the feasibility and desirability of using television as a means of providing college credit courses to teachers in service, the project staff is also aware of the fact that TV is an ideal instrument for improving the quality of teaching, and enriching the academic and cultural background of both new and experienced teachers in service by means of a series of non-credit programs. That is, the value of properly organized TV programs extends beyond that of merely accelerating teacher preparation. For TV is proving to be a medium by which teachers in service can keep abreast of the latest advances and the most recent techniques in their particular fields thereby enabling them to achieve a higher quality of classroom teaching.

Televised courses directed at improving the effectiveness and quality of teaching of teachers in service are usually offered without college credit. Therefore such courses must be organized in such a manner as to satisfy educational needs expressed by teachers themselves, although the actual topics around which these courses would be planned should also include those recommended by authorities and specialists in education. Thus, it is felt, that non-credit professional televised courses should find acceptance among the majority of teachers, providing the courses are organized around and based on their true educational needs, and presented to them in a manner so as to stimulate a desire to further their professional growth.

Non-credit professional TV courses can serve as a supplement to regular college or university courses in reviving in teachers forgotten facts or techniques, and in bringing them in contact with new ideas and recent developments in their field. Thus, our first task was an attempt to obtain all available information regarding the latest advances and the most recent techniques related to those subjects generally taught in the elementary and secondary schools of Puerto Rico. This obviously proved to be a formidable undertaking, one which was difficult if not impossible to accomplish within the limited time alloted for this survey. To assist us in this task, it was decided to gather first-hand authoritative opinions and ideas from persons in close contact with teachers and students, who could provide us with the most recent innovations in their respective fields with which teachers should be familiar, and which could be effectively offered by TV.

Thus, various authorities in subject matter and methodology,—university professors and general supervisors—were contacted through letters and interviews. (See Appendix No. 4.) During the interviews, these authorities pointed out the many gaps in the educational and cultural background of present day teachers and made suggestions as to the topics which might fill these gaps. They were unanimous in their opinions that there exists a pressing need to reinforce in-service teacher preparation at all school levels, and the general consensus was that TV courses could assist in meeting this need.

To supplement these ideas and suggestions a perusual was made of available educational publications—professional journals, text-books, bulletins, etc.—and a list was collected of advances in teaching skills resulting from psychological and educational experiments and research. A similar procedure was used to obtain data as to the latest developments and discoveries in the subjects offered, especially those in the secondary schools; although the topics appearing in the final list are largely those selected from the suggestions made by persons interviewed.

With the information provided by authorities and that obtained from educational publications, we have prepared two lists of topics around which non-credit professional TV courses could be planned: one list for elementary and the other for secondary school teachers. These lists are obviously not conclusive, since topics will be continuously added as new advances occur, or present ones which escaped our attention are pointed out. They include topics for general and specific techniques for the teaching of reading, arithmetic, writing, English, science and social studies in the elementary school. For secondary school teaching they include general and specific techniques, and subject-matter topics about biology, physics, mathematics, chemistry and social studies.

The lists as finally arranged are the following:

Topics recomended for professional non-credit televised programs.

For Secondary School Teachers

A. General techniques in:

1. Planning and meeting individual differences found in

slow-learner.

2. Selecting and using effectively appropriate audiovisual aids, devices and guides in accordance with the age, intelligence level, and interest of the group.
3. Relating activities according to the pupils' physical and mental growth and development.
4. Planning for and carrying out readiness programs.
5. Creating positive attitudes and values, and inculcating democratic principles.
6. Assisting pupils to develop an understanding of principles and concepts rather than learning by rules, rote-memory, drilling, etc.
7. Planning and relating in-school activities with everyday life situations.
8. Planning "cores" or units around students' natural interests.
9. Adapting, relating, and integrating didactic material, activities, principles, techniques, etc. from one discipline to another.
10. Guiding pupils in the transference of learning from one discipline to another.
11. Evaluating students' progress by using: self-evaluating check-lists; pictures, filmstrips, and motion pictures to set test situations for behavioral tests; interview techniques, individual diaries, tape-recording; etc.
12. Planning and guiding dynamic group activities—sociodrama, role-playing, drill games, debates, group discussions.
13. Relating psychological principles—reward-punishment, Gestalt, connexionism, etc. to the teaching-learning situation.
14. Planning for and carrying out supervised study and/or laboratory periods.
15. Planning flexible programs which follow a normal order of sequence.
16. Planning for and conducting instructional excursions, field trips, etc.

a heterogeneous classroom—the gifted, average, and/or

17. Reteaching programs or "telescoped teaching" in place or reviewing.

18. Using teaching machines, tachistoscope, accelerators and films.

19. Identifying, planning for, and carrying out special classes for exceptional children—the gifted child, slow-learning, physically handicapped, etc.

B. Specific techniques for teaching skills in:

1. *Mathematics*

    a. Using sensory devices so as to develop students sensory-motion and perceptual-motor skills, mental association, concept formation and problem solving.

    b. Fusing the historical development of mathematics with the present subject matter in order to obtain a deeper understanding of mathematical principles.

    c. Using the approach suggested by the Progressive Education Association: i.e. by teaching basic concepts and basic ideas of solution, function, symbolism, logic, proof, etc.

    d. Teaching college preparatory mathematics by showing the oneness of mathematical thinking and yet distinguishing and relating the separate areas: e.g. physics, chemistry, engineering, etc.

    e. Applying statistical concepts to daily-life.

    f. Developing students' problems solving ability: e.g. activate problems in classroom, develop problem consciousness, etc.

    g. Operating mathematics laboratories, and constructing and using mechanical models.

2. *Science*

    a. Selecting and applying generalizations or scientific principles which could be suitable as learning goals in science classes.

    b. Teaching students how to select suitable scientific reading material and study-guides; and how to use aids such as pictures, diagrams, cross references, glossaries, etc.

    c. Using laboratory methods—e.g. lecture demonstrations and/or individual laboratory methods.

   d. Using the classroom as a scientific work center.

3. *English*
   - a. Teaching the most difficult sounds in English.
   - b. Planning and adapting English classes to real-life meaningful situations.
   - c. Teaching how and when to stress words in a sentence.
   - d. Teaching how to form question sentences.
   - e. Using the different approaches for teaching vocabulary.
   - f. Teaching students techniques for self-teaching.
   - g. Teaching grammatical structure.
   - h. Carrying out laboratory practices.
   - i. Teaching the important contrasts between American English and Puerto Rican Spanish.
   - j. Guiding students in the art of listening effectively—(use of tape-recording listening)—guide sheets, etc.
   - k. Guiding junior and senior students in writing research type or expository papers.
4. *Spanish*
   - a. Conducting an analysis of literary works.
   - b. Keeping students conscious of cultural values (ethic and esthetic), as well as the historic development in the study of literature.
   - c. Directing students to develop their own thinking in terms of cultural values.
   - d. Administering and interpreting diagnostic tests to evaluate the four basic languaje skills: speaking, hearing, reading and writing, in order to determine
     - 1) speed in comprehension and interpretation of reading
     - 2) general aspects of language
     - 3) vocabulary
     - 4) organization of ideas.
5. *Other Special Subjects*
   Home Economic, Industrial Arts, Music, Art, etc. De-

monstration of special techniques in the teaching of various aspects of these subjects.

C. Subject-Matter

1. *Biology*

   a. Information as to the importance of the following in every-day life situations: fluoridation, radioactive fall-out, public health, food additives, population control, genetics, animal and human growth, etc.

   b. Knowledge of biochemistry and its relation to biology.

2. *Physics*

   Knowledge of the following concepts, principles and theories:

   a. *Quantum Mechanics* - wave mechanics, Schrodinger's equation (the study of hydrogen action), exclusion principle, selection rules for quantum changes of state, chemical bond, solid state physics, and the probability wave.

   b. *Relativity* - Concept of 4 dimensions, and simultaneity, Michelson-Morely experiment (measurement of ether drift), Lorentz transformation, the Compton effect (the "scattering" of plotons by electrons), the concept of binding energy.

   c. *Nuclear Physics* - Study of atomic nucleus: neutrons, protons, nucleons, mesons, anti-electron, anti-proton, photons, anti-neutrino, etc.

   d. *Nuclear Force* - the force which holds the nucleus together.

   e. Rules, energies, etc., relative to nuclei and their structures.

   f. *Radioactivity* - The readjustment or changes of nuclei to form a new, more stable structure.

   g. *Nuclear reactions* - Reaction which occurs usually when an exterior particle enters the nucleus.

   h. Laws of *energy* and *momentum* conservation.
   i. *Parity* - The mathematical characteristic of "steady states" of solutions of the wave equations.

   j. Thorough undestanding of fusion, fission and accelerators, etc.

3. *Mathematics*

   a. The relation of algebra and trigonometry to electrical. mechanical and civil engineering, electronics and physics.

   b. The fundamental operation of algebra, raising to a power, extracting roots, cubic equations of higher order, the position of zero, etc.

   c. The fundamental concepts and operations of trigonometry; e.g. important relation such as sine of the angle; cosine of the angle, tangent of the angle; cosecant of the angle, law of cosines, etc.

   d. The application of trigonometry to surveying and other fields.

   e. Vector analysis: e.g. the algebra of vectors and their relation to, and application in physics, civil, mechanical electrical engineering, etc.

   f. Calculus and its importance in modern day civilization.

   g. Higher mathematical theories and their applications: e.g. group theory, theory of fields and set theory.

   h. Topology.

   i. Spherical trigonometry.

   j. Modern algebra including number theory, matrices, vector spaces, complex numbers, etc.

   k. Set theory.

4. *Chemistry*

   Thorough knowledge and understanding of the following:

   a. Inorganic chemistry including methods of manufacturing common chemicals; industrial processes; chemical interactions; endothermic and exothermic reactions; equilibria and equilibrium constants, etc.

   b. Physical chemistry: Description of systems composed of various components, phases, boiling, melting, condensation, freezing, effects of concentrations, osmosis, etc.

   c. Organic chemistry. Periodic table, valence, hydrogen, carbon, balanced equations, nature of the carbon bond, catalysts, chemical nomenclature, fluorides, nuclei acids, organic crystals, etc.

d. Qualitative analysis: the analysis of substances to obtain their chemical composition, the types of ions they contain, their molecular form, etc.

e. Quantitative analysis: the analysis of substances to obtain their exact percentages and weights of composition, types of metals present, types of radicals, composition of molecules, etc.

f. Biochemistry: the chemistry of living beings, cellular osmosis, ion concentrations, organic compounds, enzymes, digestive juices, genes chromosomes, etc.

5. *Social Studies*

The knowledge and understanding of:

a. The diversity of nations and their culture.

b. The nature of international politics.

c. The historical development, and the means and goals of current foreign policy.

d. The basic problems of economics e.g. the scarcity problem, natural resources, human resources and capital resources.

e. The institutions through which our economy operates: forms of business; organization, money, banking, and credit; and government and economic life.

f. The specialized problems that concern the 20th century citizen: problems of the consumer; local and regional economy, international trade, economy fluctuations, etc.

g. A knowledge and understanding of such terms as: balance of trade, capital good and capital stock, cartel, business cycle, bonds, parity, secular trend oligopoly, public utility, etc.

For Elementary School Teachers

A. General techniques in

1. Planning for and confronting individual differences found in a heterogeneous classroom—the gifted, average, and/or slow-learner.
2. Selecting and using effectively appropriate audiovisual aids, devices and guides in accordance with the age, intelligent level and interest of the group.

3. Relating activities to the pupils' physical and mental growth and development.
4. Planning for and carrying out activities to provide readiness.
5. Creating positive attitudes and values, and inculcating democratic principles.
6. Assisting pupils in developing and understanding principles and concepts rather than learning by rules, rote-memory, drilling, etc.
7. Guiding students in developing study skills.
8. Planning and relating school activities with everyday life situations.
9. Guiding pupils in the transference of learning from one situation to another.
10. Planning teaching units around children's natural interests.
11. Using didactic material, activities and principles of techniques in the different school disciplines.
12. Using teaching machines, tachistoscope, accelerators, films, etc.
13. Evaluating students' progress by using self-evaluating check-lists; pictures, filmstrips and motion picture to set test situation for behavioral tests; interview techniques; individual diaries; tape-recordings, etc.
14. Planning and guiding dynamic group activities such as socio-drama, role playing, drill games, debates, group discussions, etc.
15. Planning for and carrying out supervised study and/or laboratory periods.
16. Relating psychological principles—reward, punishment, Gestalt, connectionism, etc.—to the teaching—learning situation.
17. Developing a reteaching lesson (review) in place of repeating; or presenting "telescoped teaching"—a cover-in-all-aspects taught lesson.

B. Specific techniques in

1. *Reading*

   a. Teaching by wholes.

b. Making phonetic, non-phonetic and poly-syllabic analysis.

c. Increasing pupils' reading rate—skipping and skimming

d. Using reading machines.

e. Relating reading material to cultural background.

f. Assisting pupils in: reading for temporary comprehension or permanent retention, reading by thought units, and in locating and applying specific information.

g. Motivating reluctant students to read.

2. *Arithmetic*

a. Assisting pupils in discovering methods when working with fractions, mixed numbers, in using the zero, and in understanding formulas and decimals, etc.

b. Using "crutches".

c. Using systematic interrelation of arithmetical processes.

3. *Writing*

a. Teaching the composition of movement—finger, arm, —and the combined method in developing handwriting ability.

b. Helping pupils develop kinesthetic control, good posture and position.

c. Identifying and helping the truly left- handed child.

d. Guiding children in perceiving good form, so as to write legibly.

4. *English*

a. Teaching the most difficult sounds in English.

b. Planning and adapting English classes to real-life meaningful situations.

c. Teaching how and when to stress words in a sentence

d. Teaching how to form question sentences.

e. Using the different approaches for teaching vocabulary.

- f. Teaching students techniques for self-teaching.
- g. Teaching grammatical structure.
- h. Carrying out laboratory practices.
- i. Teaching the important contrasts between American English and Puerto Rican Spanish.

5. *Science*
    - a. Selecting broad and universal scientific principles e.g. vastness of space, the universality of change, the universe, etc. to be utilized as guidelines.
    - b. Teaching themes and meanings rather than study of objects.
    - c. Relating happenings, incidents, current events, etc. to science classes without causing science to become incidental or accidental.
    - d. Utilizing school grounds in working in garden plots, observing plants and animal life, etc.
    - e. Carrying out experiments in the classroom—use of dishes, jars, sand, soil, bottles, etc.
    - f. Developing pupils' awareness of their environment—sky, earth, energy, forces, etc.
6. *Social Studies*
    - a. Incorporating economic education in the social studies classes: e.g. scarcity problems; natural, human and capital resources; etc.
    - b. Planning sequence of related activities among the social studies: e.g. history and geography, etc.
7. *Spanish*
    - a. Teaching grammar functionally.
    - b. Evaluating skills in speaking, listening, reading and writing.
    - c. Teaching the sentence and its parts, the paragraph, punctuation.

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chapter four

the desirability of using televised programs to supplement insufficient college and university resources

The data presented in chapter two offer a precise picture of the present academic preparation and experience of the teaching and supervisory personnel in the Puerto Rican public school system. From the conclusions based on these data, rises the challenging question as to whether present facilities and resources at the universities and colleges are sufficient to meet effectively, present day and future educational demands. That is, what plans or projections are being made to remedy the prevailing situation of the continuous staffing of teaching positions with academically unqualified teachers. To offer a clearer picture of the problem to be faced by universities and colleges in order to keep pace with the future educational demands of teachers in service, we have presented in Table IV the number of teachers in need of additional academic and professional preparation and the estimated number of years they will require to become fully prepared. As can be seen, approximately 75 per cent of the total teaching force will need five years or more to complete their academic preparation, prividing they continue studying at the present rate. But there exists the imminent danger that an increase in enrollment in the public schools will bring about further increase in the number of academically unqualified teachers, unless Puerto Rican universities and colleges are making plans to expand facilities and resources so as to prepare sufficient number of teachers to fulfill future demands for more and better prepared teachers.

The ratio of the present teacher supply to future educational demands is graphically presented in the table found on the following page. In this table is shown the number of teachers that will be needed within the next seven years, along with the number of teachers that could be prepared by the College of Education of the University of Puerto Rico. These figures indicate that even if the plans and projections for supplying more and better prepared teachers are accomplished there will still remain a significant gap between teacher supply and educational demands. And, if these resources are increased as planned, the shortage of qualified college professors might well be extended to Puerto Rican universities and colleges, a situation common now in American universities. Moreover,

TABLE NO. IV

NUMBER OF TEACHERS IN THE SECONDARY AND ELEMENTARY SCHOOLS WHO NEED ADDITIONAL ACADEMIC AND PROFESSIONAL PREPARATION AND THE ESTIMATED NUMBER OF YEARS THEY WILL NEED TO BECOME FULLY PREPARED

	No. of Replies Received	No. of Teachers Not-fully Prepared	Estimated no. of yrs. of study needed					
			1	2	3	4	5	5+
Secondary School Teachers	4901	2968	97	248	597	184	198	1644
Elementary School Teachers	7169	5439	327	118	156	431	658	3749
Total and per cent	12070	8407	424 5.0	366 4.3	753 8.8	615 7.4	856 10.3	5393 64.2

Data collected on January 31, 1961

as the demand for a higher quality of education at all levels increases, many licenced teachers in service may feel the need (or be required) to return to college, thus aggravating the problem of overcrowded, understaffed universities and colleges.

Traditionally, the College of Education of the University of Puerto Rico has assumed the function of preparing the academic and administrative personnel who serve in the public schools of Puerto Rico. Realizing the magnitude of its responsibility to Puerto Rican society, the University has constantly expanded ites facilities in an attempt to meet the educational demands of a dynamic society. An increase in facilities and resources has naturally resulted in greater expenditures. To meet these, the University has asked, and has always been granted, complete and generous financial support from the Government of Puerto Rico. (For example: the budget for expenditures assigned to the University of Puerto Rico increased from $8,276,898 in 1949-50, to $20,850,982 in 1958-59.) Yet, if it is true that facilities have been expanding at a remarkable rate, it is also evident that expansion, even at the present rate, cannot maintain the pace of increasing demands for more fully-prepared teachers.

There are four other institutions in Puerto Rico which offer teacher preparation courses — the Catholic University, the Inter-American University, the College of the Sacred Heart, and the Puerto Rico Junior College. The present rate of teacher preparation at these institutions can be estimated from the figures given by Hayward*. According to these figures the total output of teachers from all these institutions amounts to approximately 500 with Normal Diploma and a very small number wih a B.A. Degree in Education.

However, in order to obtain a more complete picture from which to draw conclusions, one must also study the future plans or projections of these universities and colleges to fill the present and future gap between teacher supply and educational demands. To obtain this information the four institutions were contacted and requested to provide information as to the plans for increasing resources during the next five years A cursory glance of the data given sufficed to show that the responsibility of supplying qualified teachers will continue to fall on the University of Puerto Rico, although undoubtedly the other institutions will contribute somewhat to relieving the teacher deficit.

To summarize, according to the data gathered in the present study, universities and colleges in Puerto Rico cannot hope (with their present facilities and resources) to prepare a

TABLE PREPARED BY THE PLANNING COMMITTEE OF THE COLLEGE OF EDUCATION

Number of teachers needed in Puerto Rico in the next six years[1]

	1960-61		1961-62		1962-63		1963-64		1964-65		1965-66	
	Elem.	Sec.	Elem.	Sec.	Elem.	Sec.	Elem.	Sec.	Elem.	Sec.	Elem.	Sec.
	1380		1380		1300		1200		1200		1200	
Elem. English	180		180		150		135		135		135	
Total[2]	1560	952	1560	955	1450	961	1335	956	1335	956	1335	956
	Number of teachers that the College of Education could prepare											
Normal	570		555		595		669		745		745	
B. A.	368		503		446		436		465		524	
Total	938	285	1058	240	1041	266	1105	338	1210	413	1269	488
The deficit*	622	667	502	715	409	695	230	618	125	543	66	468

* Some of these will be prepared by the other universities and colleges.

[1] Report - 1960-61 to 1965-66, Department of Education.

[2] Number of teachers needed: Elementary - 8 575 Secondary - 5,736 (6 years)

[3] Planning Committee, College of Education, Table #33.

sufficient number of teachers within the next five years to meet the demands of the public school system. Educators in Puerto Rico might well follow the lead set by other countries in meeting the problem of teacher shortage by using TV as a means of accelerating teacher-training programs, and bringing the effectiveness of good teaching to a larger audience of teachers.

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* Hayward, Beresford L., *Toward comprenhensive Educational Planning in Puerto Rico.*
Department of Education; August, 1968. p. 12.

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chapter five

the feasibility of using television as an instrument for the education of teachers in service

availability of manpower

This chapter and the next two with deal with the feasibility of using television in Puerto Rico for the education of teachers in service. The extent to which present human resources are sufficient and available for the establishment of television programs designed to improve the academic and professional preparation of teachers in service, is the aspect discussed in this chapter.

By means of investigation into the human resources available to carry out the proposed programs for in-service teacher education in Puerto Rico, an encouraging amount of local talent has come to light. Lists of names have been compiled and the availability of technical manpower has been established. The three main groups of persons necessary for initiating and carrying out the programs would be following: (1) non-technical personnel for the production of professional education television programs, (2) coordinators, and (3) technical manpower.

Availability of non-technical personnel.—We contracted the services of Mr. Roberto Estrella, Acting Director of the Audiovisual Center of the University of Puerto Rico, to investigate the availability of the following personnel needed for the production of educational television programs: professors who are authorities in various fields, professors with known dramatic ability and telegenic personalities, script writers, producers, directors, and other talents. Mr. Estrella sent letters to all those agencies, television stations, colleges, societies, and other groups that, to his knowledge, have in one way or another previously used persons for participation in televised education programs. The letters were of three different types; one for the government agencies, one for television stations and one for colleges. (For letters, see Appendix No. 5.)

From all the replies he received, (including answers from ten government agencies), Mr. Estrella compiled a long list of names and addresses of persons with some experience related to educational television. To each of these persons a letter and questionnaire (See Appendix No. 6) were sent eliciting information regarding his preparation, experience, and attitudes toward the proposed programs. One hundred and ten people answered. A study of the returned questionnaries was made and the persons grouped into three classifications: (1) persons with experience in educational television in Puerto Rico, including writers, producers, directors, animators, graphic artists, (2) persons who have studied television, but who have not had practical experience, including public and private school teachers, university and college professors, and others; (3) persons with various kinds of experience whose skills could be adapted for work in educational television programs. In Appendix No. 8 we present the list of the names in the three groups.

Availability of Coordinators. We have mentioned in a previous chapter the need for using people to act as coordinators whose functions must be: a) familiarize themselves in advance with content, key questions, materials, and study guides of each TV program; b) help plan and lead discussions sessions based on TV programs; c) make assignments, suggest reading, etc., related to the TV courses; d) assist in the evaluation of teacher's performance in the course; e) provide liaison with the university giving credit for the course and carry out university regulations and procedures that may be prescribed: e. g., registration, keeping attendance records, reporting student grades, etc. The desired qualifications should be: a) expertness in his field or specialty; b) expertness in modern trends in subject matter and methodology; c) demonstrated ability to work with adults in a leadership capacity; d) demonstrated ability to lead fruitful discussions with proper balance between direction and cooperative participation; e) appropriate academic training with the B. A. as the minimum.

In order to locate such individuals in all the communities of Puerto Rico, we asked the assistance of school superintendents throughout the island in identifying persons in their school districts who, in their opinion, have the neccessary qualifications to act as coordinators. (For letters see Appendix No. 7.) From the information received we produced lists of names for each locality. These lists are presented in Appendix No. 8

Availability of technical manpower. An inquiry was made into the availability of technical manpower by means of conversations with Mr. Rafael Delgado Márquez, General Administrator of Radio and Television in the Government of Puerto Rico. Mr. Delgado not only expressed his sympathy with and interest in the establisment of organized television programs for teachers, but also stated his willingness to cooperate in the organization and production of these types of programs. He informed us that such programs could be transmitted by WIPR TV Station, using the station personnel in their regular working hours, and that there was no need for additional manpower. He pointed out, however, that if the programs needed extra time to that of the regular schedule, then perhaps the project would incur additional costs, but that the same personnel could do the work on an overtime basis.

If now, or at a later date when the programs have been functioning for a while, it is found desirable to provide and organize a special room at the University or elsewhere with equipment for remote control transmission, then perhaps there would be need for some additional technical personnel.

From the information gathered and presented here on the availability of manpower, it is obvious that there should be no problem in securing the necessary personnel to put the program into effect. Therefore, as regards this aspect, the project appears to be quite feasible. It would, however, be advisable to conduct some kind of workshops or institutes from time to time in order to prepare any new available talent and improve the techniques of those already working on the educational television programs.

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chapter six

the feasibility of using television as an instrument for the education of teachers in service

availability of material resources

In the previous chapter ample evidence was presented which showed, beyond a doubt, that in Puerto Rico there already exists a reasonable number of non-technical and technical personnel with some training and/or experience related to educational television. From this evidence, it was concluded that as regards the availability of sufficient manpower, the establishment of educational TV programs is a feasible project, providing that there also exist in Puerto Rico sufficient and available material resources for both the production and reception of such programs.

To determine the availability of material resources, information was gathered from two main sources: by questionnaires sent to teachers in the Puerto Rican public schools, (See Appendix no. 3) and from personal conversations with Mr. Rafael Delgado Márquez, parts of which have already been mentioned in the previous chapter.

During one of these conversations Mr. Delgado, on being questioned as to the availability of material resources replied that the government TV station, WIPR, has adequate facilities and technical equipment to produce educational TV programs at a professional level. Thus, no extra costs would be incurred in producing educational programs at the government TV station. There would be however, additional costs for such items as film production, and video tape and kinescope recordings. Nevertheless, the project staff feels that the educational benefits gained will, in time, more than compensate the expenses incurred in purchasing special TV equipment. To mention but a few of these benefits, we may state that television recording—kinescope or video tape—makes it possible to re-transmit programs, thereby enabling a greater number of teachers to benefit from a well-produced program, showing, for example, a particular teaching technique. Or, a teacher may see his own performance and thus, evaluate his own teaching skills. Programs can be re-transmitted without further production expenses. The only additional cost might be a film library in which films, and video-tape would be classified and re-used on demand.

Another additional cost might be incurred in equipping a remote control room in which demonstration or other classes could be televised in a natural atmosphere. Such equipment as cameras, lighting and didactic material would be permanently installed in this special classroom. However, the equipping of such a classroom might be postponed until after the experimental stage has been carried out and the precise classroom arrangement determined.

Mr. Delgado also mentioned that fortunately there is available air-time at the government station, thus obviating the need for renting or buying air-time from a privately owned station. He further pointed out that the reception of programs transmitted by WIPR, the government station, is not always clear in certain parts of the island. However, this situation will soon be remedied when the government TV station at Mayaguez begins transmitting, re-transmitting or receiving relayed programs. Thus, it appears that there are adequate and available material resources to produce the proposed educational TV programs.

As for the availability of TV sets to teachers, in order to receive these programs, the number was estimated from the returns of the questionnaire, previously mentioned. These

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TABLE NO. V

AVAILABILITY OF TELEVISION SETS TO TEACHERS

January 31, 1961

Total number of replies received	12,743
Total number of teachers with privately owned TV sets	9,975
Per cent	78.2%
Total number of teachers who do not own but have access to a TV set	1,310
Per cent	10.4%
Total number of teachers stating inaccessibility to TV sets	1,458
Per cent	11.4%

returns were tabulated and the results are shown on the following page in Table No. V. As can be seen the vast majority of teachers (88.6%) who replied either own or have access to a TV set. Approximately eleven per-cent claim inaccessibility to a TV set. It is recommended that further investigation be carried out in order to determine the reasons why TV sets are inaccessible to these teachers, and what steps can be taken to remedy this situation.

The effectiveness of educational televised programs will be greatly enhanced, if teachers could meet in small discussion groups in a special classroom equipped with TV sets. Such an arrangement has obvious advantages. For example, the teachers could receive preliminary instructions and orientation before viewing a program, and, they may carry out post-discussions directed by the group coordinator. A further advantage would be that this special classroom, would make educational TV programs accessible to all teachers in service. The government could help solve this problem by providing at least one TV set in each town of the Island, conveniently located and readily available for the use of teachers.

The initial installation of equipment for the production and transmission of educational TV programs will undoubtedly involve certain costs. As programs expand, and used material is replaced, expenses can be expected to increase. However, at present the government TV station has adequate and sufficient material resources to permit the production and transmission of educational TV programs with only the minimum additional costs.

Thus, it seems that as regards the availability of material resources—both productive and receptive—the use of TV for the in-service education of teachers is a feasible project.

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chapter seven

the feasibility of using television as an instrument for the education of teachers in service

attitude of university and college administrators and of the personnel of the public schools

In planning the initiation of educational television programs of any kind, the importance of their acceptance and of public interpretation and understanding must not be underestimated. With regard to the present television project, the prevailing attitudes in the universities and colleges of Puerto Rico, and of administrators in the Department of Education and personnel of the public schools have been estimated. From a preliminary impression gained through talks and exchanges of views with these people, we can be almost sure that there will generally be a favorable acceptance of the proposed programs. In this chapter, therefore we will discuss the current attitudes of the forementioned persons.

Many signs point to a favorable attitude toward active involvement in educational TV on the part of faculties of the University of Puerto Rico. To cite some examples of the general interest in the use of television, it may be noted that in a partial report (May 1959), the planning committee of the College of Education of the University of Puerto Rico, which was hoping to extend its services to provide more in-service teacher preparation, recommended, among other things, the use of televised credit courses. Also, the Division of Extension Courses of the University of Puerto Rico has previously proposed transmitting courses by television, and some years ago the Chancellor himself became interested in the idea of establishing a television station for the dissemination of university teaching throughout the island. Finally, there is the sponsorship by the University of the project culminatnig in this report, and the wholehearted cooperation and interest of many of the Faculty in its progress and its findings. It would seem, therefore, that the University climate is favorable to the consideration of active involvement in TV. It would thus appear that the project is generally welcomed as a further step towards a desired goal.

With regard to the transmitting of credit courses by television, undoubtedly, there must be meetings and conversations between personnel at the University of Puerto Rico and other colleges of the island at which those concerned may have the opportunity to discuss requirements for the credit courses, in order that some island-wide basic regulations be established. During these meetings difference of opinions may arise. However, at present, the general attitude in the various universities and colleges seems to be favorable toward a project of this nature.

In conversations the Dean of the College of Education and the Director of the Television Project had with the Hon. Cándido Oliveras, Secretary of Education and members of his staff, in which the whole project was explained and their cooperation was requested, a most enthusiastic attitude was encountered, not only regarding cooperation, but also revealing a desire for active participation in the project. Provisions and eachers must be maintained. were made for the project staff to use the resources of the Department of Education in collecting data on the academic preparation of teachers, availability of TV sets, etc.

At six meetings, during which all the school superintendents were interviewed, the whole project was explained, giving rise to a reaction of decided approval, and confirming the need for the proposed television programs. Also, letters have been received from school personnel of the island demonstrating enthusiasm for the project.

More evidence of a generally favorable attitude towards televised education programs can be seen in various articles in educational journals (e.g. *Education*, Feb. 1959) which reveal an interest in and gratitude for the few educational programs already being transmitted over WIPR TV, and in memoranda submitted to the Secretary of Education, which mention the usefulness of television in teacher education.

Several interviews have been held with Mr. Delgado Márquez, Director of Radio and Television in the Government of Puerto Rico, who has always shown a keen interest in this project. He himself had already envisaged similar programs and had submitted to the Secretary of Education some plans for the establishment of education programs for students in the island. He offered the project staff his most hearty cooperation and, in fact, gave some useful ideas and relevant information for our survey work.

From a perusal of literature on the use of television in education in the United States, certain points have come to light regarding faculty and student opinions and attitudes. Faculty attitudes varied from enthusiastic to a few quite negative with the majority somewhat undecided or indifferent. However, interest in and experimentation with the medium are growing, and it has been found that from those who volunteered to teach over television the majority approved of its use, believing it would mean better teaching, especially for courses with large enrollments. After some initial "stage fright" most teachers found that they liked the medium better than they thought they would. Students also varied considerably in their opinions, but on the whole, though generally showing preference for conventional classes, they rated television teaching higher for large groups of 150 or more, and preferred it if they could be assured of being taught by the best instructors. It was found that resistance to television was often overcome by familiarity with the medium, and that the most outstanding causes for opposition and reluctance to utilize it were confusion as to the philosophy and purpose of educational television, and certain fears regarding appearance on the television screen and possible subsequent criticism.

From the above points we may infer that, although at present the general attitude towards the educational television programs planned in Puerto Rico is most favorable, it is possible that in the course of time as the planning of the programs and their initiation get under way, a certain amount of indifference and opposition may be encountered. It is, therefore, important to be constantly gauging opinions by means of consultations, especially during the experimental stage, in an effort to forestall any serious objections that might arise. Any misunderstanding that might occur must be clarified by orientation, and the present favorable attitudes among educators and eachers must be maintained.

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chapter eight
summary and conclusions

Throughout this report we have constantly kept in mind the two main aspects of the survey, i. e., the *desirability* and *feasibility* of establishing televised educational programs for teachers in service. The following is a summary of the findings and conclusions in terms of these two aspects.

Desirability

1. From the results of our investigation, carried out by means of consultation with various specialists and reading of available literature, it appears, that TV has already proven advantageous as an educational medium in many areas throughout America. It therefore, seems reasonable that educational TV should also contribute greatly to the solution of some of the most pressing problems in the field of education in Puerto Rico.

Some of the most salient reasons for, and advantages of using television for the in-service education of teachers are the following:

a. the serious scarcity of properly trained teachers in the public school systems.

b. a shortage of university professors to teach extension courses, the means by which teachers attempt to complete their training.

c. the ability of a telecast to reach large numbers of persons over a wide area, making possible the participation of the best professors or other talent available in the transmission of televised classes, thereby multiplying the effectiveness of competent teaching by extending the reach of the best teachers.

d. the ability of television to bring to student teachers educational experiences not otherwise readily available: authoritative discussions of community problems and world events, field trips, demonstrations, etc.

e. effectiveness as a teaching tool of the medium itself as demonstrated by experiments which indicate that the quality of work done by students in TV courses compares favorably with work done in conventional classroom courses, provided students are properly motivated and the TV courses are of high quality.

2. From an analysis of the data gathered by the project staff with regard to the present preparation of teachers in

service we may draw the following conclusions:

a. that more than half (56.3%) of the supervisors are in need of receiving further academic and professional preparation.

b. that more than three-fifths (60.6%) of the secondary-school teachers need to receive more education either in their general preparation or in their specialty.

c. that more than three-fourths (75.8%) of the elementary-school teachers do not have the full academic or professional preparation needed to guarantee the best quality of teaching for the children attending public elementary schools. The finding emphasizes the magnitude of the problem and the urgent need of increasing the facilities and resources for the education of teachers in service.

d. that the majority of the teaching force has five or fewer years teaching experience in their present positions.

e. that according to the opinions of a selected group of supervisors of schools and university professors there are many gaps in the educational and cultural background of present-day teachers with regard to the latest advances in subject-matter and the most recent teaching techniques. These supervisors and professors are unanimous in their opinion that there exists a pressing need to improve in-service teacher preparation, and the general consensus is that TV courses could assist in meeting this need.

f. that the present facilities (human and material resources) provided by the University of Puerto Rico and other universities and colleges for preparing future teachers and those already in service, are not sufficient, and will not be so even within the next five years to meet educational demands of the public school system. Thus, TV education programs, if established, will represent a desirable additional means for the education of teachers in service.

g. that approximately 75 per cent of the total teaching force will need at least five years or more, to complete their academic preparation, provided they continue studying at the present rate and with the present facilities. Thus, educators in Puerto Rico migh well follow the lead set by other countries and use TV as an additional means of accelerating teacher-training programs.

Feasibiity

1. From the information gathered and presented in this report, it is obvious that there should be no problem in securing the necessary personnel to put TV educational programs into effect; therefore, as regards this aspect, the project appears to be quite feasible.

2. From preliminary impressions gained through talks and exchanges of ideas with personnel at the Central Office of the Department of Education, and with superintendents of schools, we can almost be sure that there will generally be a favorable acceptance of TV programs as an additional means of educating teachers in service.

3. It does appear—from our impressions derived from various sources—that the organization of TV credit courses is generally welcome by the University of Puerto Rico and the other colleges and universities of the Island, as a further step towards increasing their services to teachers.

4. Although we do not have at present all the material resources to establish a convenient well designed set-up for the transmission of televised education programs for the benefit of the teachers of Puerto Rico, we can count on the most necessary and important resources: (a) the air time—to be provided by WIPR-TV and by the government station at Mayaguez; (b) the technical equipment, and (c) the accessibility of TV reception to almost all teachers.

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chapter nine

anticipated problems and some suggestions for meeting them

Th initiation of any new educational medium involves certain administrative and other problems which should be anticipated so as to prevent their impeding the effective realization of the programs for which the medium is used. Therefore, in this chapter we intend to point out certain aspects and problems that should be considered when definite plans are made for the initiation of televised education credit and non-credit courses for teachers in service in Puerto Rico.

The need for acceptance of the proposed programs has been mentioned in a previous chapter. Nevertheless, we reiterate here the great importance of securing the acceptance of those who will participate in giving the courses as well as those who will be viewing them. Some means that would contribute toward the acceptance of the program should include participation by teachers, supervisors, and college or university personnel in planning and evaluation of the televised productions, and in the conduct and organization of study groups based on the televised programs. By these means such persons would be able to take an active part in and would contribute towards the decisions taken. In this manner it is hoped that their interest in the programs and their acceptance thereof would be enhanced.

Another means of stimulating acceptance of the programs would be some practical professional inducements for those teachers participating in them, such as the following: (1) university and college credit for courses taken via TV, (it is suggested that one TV credit consist of 8 hours of television viewing and 8 hours of related group discussion); (2) credit toward special certification or diploma for teachers successfully completing programs of courses via TV; (3) exemption from registration fees to teachers taking courses via TV.

Some means of recognition and compensation are necessary for professional personnel participating in the production of the programs. Programs may be considered, either: (1) as part of the regular duties of a teacher or professor, (in which case a professor who gives a three-credit TV course for one semester should be relieved of teaching six-credit hours of his regular classes); or (2) in addition to regular duties on overtime basis with extra pay, according to systems of renumeration for time spent in addition to official school duties. The pro-

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blem of coordinating the efforts and interests of all the participating agencies — the Central Office of Education, the local school districts, and the teacher-education programs in the colleges and universities — is a critical one and a solution must be found which will insure programs of high technical, professional, and academic quality. A Commission on Television for the In-Service Education of Teachers should be created with representation from the Central Office of the Department of Education and the colleges and universities, which will establish policies and lines of control, and act as a central agency for planning, coordination, and review. In general, it is recommended that the technical aspects of scheduling, programming, and organization should be the responsability of the Central Office of the Department of Education and the staff of the government television station. Primary responsability for the content of programs, preparation of scripts and study guides, procedures for student evaluation, and the selection of professors and coordinators should lie with the universities, particularly in the case of credit courses. In the case of non-credit courses, the Central Office of the Department of Education may wish to take greater responsibility in production and direction, particularly as local needs are taken into consideration. Certain modifications in existing policies, programs and organizatian in the participating agencies may be necessary in order to achieve proper coordination. These modifications might include: the accreditation of TV course by the universities and colleges, the adjustment of schedules in schools and in the professional responsibilities of partipating teachers, the adjustment of participating professors' teaching loads, the acceptance of succesfully completed TV courses as the equivalent of regular courses required for certification, and the use of some supervisors and other qualified personnel in leading local TV groups.

In organizing the educational television courses the following educational personnel would be needed: (1) a producer who would act as chief organizer and coordinator of planning, be the liaison between the TV station and the educational personnel, and hold primary responsibility for the smooth running of all aspects of planning and production; (2) script writers whose primary responsability would be to adapt the material to be taught into workable TV persentation under the direction of the producer and in cooperation with the professor who will do the actual teaching; (3) professors on camera to give the TV courses, and (4) a director for planning and rehearsing, etc.

For teachers taking the credit courses, detailed schedules of the classes showing dates, text pages to be covered, and problems assigned for each of the classes, should be distributed.

At the same time they should receive full information regarding all phases of the course, including instructions regarding the form in which assignments should be written up, where they should be turned in, and how the various grades are averaged in order to arrive at the final grade, etc. For the coordinators, guides should be prepared which may include a general outline of the whole semester or year's program, a summary of the contents of each program, a list of questions and points to be considered in group discussions, other instructions and suggestions, and evaluation procedures.

Evaluation of the proposed televised education courses is an important aspect, and therefore the most reliable and valid way of judging the effects of such programs in the in-service education of teachers must be considered. Analyses should be made of individual teachers' achievement as a result of taking TV courses, and of the effect of programs on improving the quality of teaching and in increasing the number of qualified teachers. A study should also be carried out by means of questionnaires, group conferences and interviews, to determine the reactions of participating teachers, supervisors, and professors. Evaluation of individual teachers' achievement could include periodic assignments, readings, and reports, and a final written examination. The final examination might be administered and corrected locally, or administered locally and corrected centrally by colleges and universities.

Other points to be considered in the general evaluation of the programs would be, whether the materials taught and the objectives of the course are appropriate to the needs of teachers in service, and whether the methods, demonstrations, readings and assignments for TV are appropriate in terms of the objectives of the course. The values and unique contributions of the courses could also be studied.

If the proposed television programs will involve demonstration lessons in which the active participation of a class is to be included, it may be necessary to establish in some school near the University and the General Office of the Department of Education, demonstration classrooms utilizing remote control TV facilities. Such remote facilities would incur additional cost which should be taken into account when financial estimates are made.

If such remote facilities are not needed, there will apparently be no need to incur extra costs for the purchase of equipment, providing the facilities of the Government TV stations are sufficient and their technical personnel are employed in the transmitting of the programs as part of their regular duties.

However, it will be necessary to meet the cost of running the administrative organization, and also to pay the professional educational personnel mentioned earlier in this chapter.

In conclusion a word of caution might be in order. Although the project staff is strongly convinced of the feasibility and desirability of initiating television courses as an additional educational medium for in-service teacher education, it feels that before any attempt is made to transmit such education programs every effort must be made in their planning, organization and presentation in order to ensure that these programs be of the highest quality.

chapter ten

recommendations and suggestions

We, the project staff, recommend that televised teaching, because of its comparative effectiveness, appropriateness, desirability and feasibility, be used in Puerto Rico, as part of the in-service education of teachers. This televised teaching should include both in-service credit courses and non-credit in-service programs.

Some preliminary steps should be taken before beginning the transmitting of such televised educational programs.

It is advisable that at least a six-month period be used for planning the administrative set-up, selecting and giving special training to the educational personnel, and producing the necessary didactic material for the first period of transmission.

The following suggestions—some of which have already been given in previous chapters of this report—would, in our opinion, greatly help in the realization of the preliminary steps:

1. Accurate and up-to-date information regarding developments and possibilities in television education must be obtained through reading of available literature, consulting with persons who have had experience in televising credit and non-credit courses for teachers, and observing and getting first hand experience from places where education programs for teachers are telecast. (A list of sources of information and service in educational television is found in A.A.C.T.E.

   Television in Teacher Education. Washington, D. C. 1960. p. 72. A list of names of persons to contact for information about television experiments, and their addresses is given in Ford Foundation's report.

   Teaching by Television. New York City, 1959, p. 62. Credit courses for teachers in service could be observed at Iowa State Teachers College, Cedar Falls; also in the State of Texas through any one of the 143 colleges in the State; and at the Consolidated University of North Carolina and the New York State Regents television programs for teachers.

2. A producer, various script writers, the necessary professors on camera for the first set of televised programs to be telecast, and a director for planning and rehearsing, should be selected and appointed for a year's work.

(in chapter 9 of this report we have given a description of the functions of each of these people. In the appendix there is a list of names of persons from which a selection can be made.)

3. *Coordinators*— one in each town for each credit course to be televised— should be selected. (Information about coordinators and their functions is given on previous pages of this report. A list of names of persons, grouped according to their specialties and recommended as having the necessary qualifications is included in the appendix.
4. As the teachers following the courses will be working in school during the daytime, consideration and care are needed in planning the schedules of the various courses. It does seem that the best time for the televised credit-course programs is in the evening, after 5:30 p.m. From the returns of the questionnaires sent to the teachers, the results show (see Table No. VI) that more than four-fifths on the teachers —81.9%— prefer the telecast from 5:30 p.m. on.

TABLE NO. VI

TEACHERS' PREFERENCES FOR APPROPRIATE TIME FOR THE TELEVISION PROGRAMS

Number of replies received	12,743
Number of teachers who prefer the following time:	
from 4:30 to 5:00 pm	1,052
per cent	8.3%
from 5:00 to 5:30 pm	1,256
Per cent	9.8%
from 5:30 to 6:00 pm	4,738
Per cent	37.2%
after 6:00 pm	5,679
Per cent	44.7%

One hour transmission is considered too long for viewing and remembering material presented in TV courses; it is preferable to have some spacing between each type of program. The following is a typical schedule for two three-credit courses and three non-credit programs to be transmitted three times a week, a half hour for each program for one or two 16-week periods. A half-hour discussion period would be held locally immediately after the TV credit program, under the guidance of a coordinator.

Time	M	T	W	Th	F	S
30 min.	English	Math.	English	Math.	English	Math.
30 min.	Biology	Problems of Teaching	Biology	Problems of Teaching	Biology	Current Events

5. In order to decide what credit courses should be offered for the first series of TV programs, we suggest that teachers willing to take these courses be consulted as to their preferences. However, our findings indicate that the most needed credit courses are those in the following areas: natural sciences — physics, biology, earth science and mathematics; social sciences — international relations, sociology, current history and social problems; humanities — Spanish and English literature, art and philosophy; and that professional courses should be those of the third and fourth year college level—human growth and development, psychology of learning curriculum development, tests and measurements, etc.
6. In order to decide what topics will be included in the non-credit TV programs, we recommend that the teachers be consulted as to their preferences from among those appearing in the two lists of topics prepared by us; (see chapter three).
7. In order to gain the experience necessary for scheduling a full program of in-service TV courses for teachers, it is proposed that a pilot project be undertaken in the planning, presentation, and evaluation of three one-semester courses: a credit-course for elementary school teachers, a credit course for secondary school teachers, and a non-credit course. The following steps are recommended for this project:
   a. planning phase (six months)

(1) the planning and scripting of the programs.

(2) appointment and training, as needed, (possibly through a series of workshops) of production, teaching, and local coordination personnel.

(3) preparation of manuals for teachers taking each course for credit, including summaries, bibliographies, background and other supplementary content material, assignments and exercises, etc.

(4) preparation of needed TV visuals for broadcast use.

(5) preparation of guides for the use of local coordinators, including discussion guides, tests, and other evaluation devices.

(6) registration of students in local discussion groups.

b. presentation phase (one semester)

(1) presentation of the pilot programs and local associated discussion groups.

(2) collection and evaluation of evidence of student achievement, tests, assigned papers, etc.

(3) recording by video-tape or kinescope of all programs.

c. evaluation phase (to be carried out partly during and partly subsequent to the planning and presentation phases).

(1) the planning and carrying out of a controlled program of evaluation embodying some or all of the following features:

(a) establishment of control groups of teachers receiving instruction in content similar to that being presented by TV through

1. readings and assignments by correspondence, and/or.

2. conventional classes at the university and evaluating the performance on common examinations of teachers in the TV and non-TV course.

(b) surveying, through questionnaires and interviews, the opinions of teachers taking the TV courses regarding their effectiveness.

8. On the basis of experience gained in the pilot project, the analysis and review of the video-taped or kinescoped recordings of these programs, and the results of the evaluation phase of the pilot project, decisions can then be made as to the nature and extent of year-round programs.

9. Of crucial importance in considering such project is the proper organization of personnel with clearly defined lines of authority and function, and an adequate budget. The preparation of such an organization and its budget should have the benefit of advice from experts in the field of educational TV.

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Appendixes

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appendix no. 1

letter send by Dr. Aida A. Vergne, assistant to the dean of the College of Education, U.P.R., to Dr. Augusto Bobonis, dean of the College of Education, proposing the study of the possibilities of offering televised educational programs to teachers in service.

Appendix No. 1

UNIVERSIDAD DE PUERTO RICO
Río Piedras, P. R.

31 de marzo de 1959

Dr. Augusto Bobonis
Decano Interino
Facultad de Pedagogía
Universidad de Puerto Rico

Estimado doctor Bobonis:

Me complace someter a su consideración, algunas ideas relacionadas con un proyecto especial para que el Colegio de Pedagogía asuma el liderato y parte de la responsabilidad que le corresponde, en la orientación de los miles de maestros provisionales en servicio en el sistema de instrucción pública de Puerto Rico.

Como usted sabe, la educación en la isla pasa hoy por un período difícil en su historia. La situación actual, en lo que a maestros debidamente preparados se refiere, es crítica. Informes de estudios recientes nos lo prueban con datos irrefutables. Si se utilizan métodos científicos para determinar los efectos de la misma en la educación de nuestros niños los resultados serían alarmantes. Las consecuencias de esta situación son de trascendental significación para la vida y la cultura de Puerto Rico. Considérese por un momento las aspiraciones del pueblo de Puerto Rico en lo que a progreso y mejores niveles de vida se refiere. ¿Podrían lograrse las metas deseadas si el programa educativo no está respaldado por un grupo de maestros debidamente preparados?

Esto debe ser preocupación honda de todas las personas interesadas en la educación en Puerto Rico. Es un problema serio que requiere solución. Se han propuesto varias medidas para resolverlo pero ninguna de las medidas propuestas, por sí sola, lograría corregir la situación. Hay un sinnúmero de factores, todos entrelazados que contribuyen a dar mayor complejidad al problema. Las posibilidades son de que el mismo no pueda resolverse totalmente en poco tiempo.

¿Qué puede hacer el Colegio de Pedagogía de la Universidad de Puerto Rico para colaborar en la solución del problema? Se podrían intentar varias medidas, entre ellas, ofrecer programás acelerados, tener una noble sesión de verano, ampliar los programas de extensión, etc. Pero hay otro medio de llegar a más maestros en menos tiempo en forma económica y eficiente, para mejorar su preparación.

Propongo que se estudie las posibilidades de que el Colegio de Pedagogía ofrezca un programa de educación en servicio, por televisión. El mismo podría ofrecerse, con o sin crédito, de acuerdo con el criterio de las personas que realicen el estudio. Creo que las potencialidades extraordinarias que nos ofrece la televisión podrían utilizarse para ofrecer oportunidades magníficas de crecimiento profesional.

El programa que propongo utilizaría las facilidades de la emisora WIPR-TV y respondería, en términos generales, a lo siguiente:

1. Problemas y necesidades de los maestros provisionales. La identificación de estos problemas se haría utilizando diversos medios de investigación como cuestionarios, entrevistas, etc.
2. Planeo del programa conjuntamente con el Departamento de Instrucción.
3. Sugerencias para el proceso.
    a. Se ofrecerían oportunidades de participación a maestros y supervisores locales.
    b. Se organizarían grupos de estudio localmente y los mismos se reunirían para ver los programas y discutir luego las ideas expuestas y la aplicación de las mismas.
    c. Se proveería para que los grupos locales enviaran preguntas, dudas, etc. a la estación central.
    d. Se evaluaría el programa constantemente para determinar su efectividad.

Las ideas que anteceden las discutí recientemente con los educadores Hollis L. Caswell, Florence Stratemayer, Paul Witt y Harold Wigren. Este último es especialista en televisión educativa en Houston, Texas y actualmente trabaja de asesor de la NEA en la misma área. Todos están de acuerdo en que la idea de ofrecer preparación profesional por televisión tiene grandes posibilidades y de que valdría la pena explotarla. Tal y como lo propongo no se ha realizado en ningún sitio aún. La más que se acerca a ella es un programa para maestros en servicio que lleva a cabo el distrito escolar de Houston en Texas. De aceptarse la consideración de esta idea sugiero que se traiga a Puerto Rico al Dr. Harold Wigren a quien solamente tendríamos que pagar la mitad de los gastos de viaje y estadía. La NEA pagaría la otra mitad. Sugiero además que se nombre un comité para que formule un plan experimental y que se solicite, para realización del mismo, la ayuda financiera de alguna Fundación de Estados Unidos.

Cordialmente,
(Fdo.)

Aida A. de Vergne, Directora
Departamento de Metodología
y Práctica

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appendix no. 2

the research design

Appendix No. 2

A SURVEY TO DETERMINE THE FEASIBILITY AND DESIRABILITY OF USING TELEVISION AS AN NSTRUMENT FOR THE IN-SERVICE EDUCATION OF TEACHERS

Work to be performed by the COLLEGE OF EDUCATION OF THE UNIVERSITY OF PUERTO RICO, with the authorization and cooperation of the DEPARTMENT OF EDUCATION OF P. R.

Work to be performed pursuant to a contract with the UNITED STATES OFFICE OF EDUCATION, DEPARTMENT OF HEALTH, EDUCATION AND WELFARE.

RESEARCH DESIGN

The Project Staff

Oscar Loubriel, Director
Roberto Morán, Assistant Director

Advisory Committee

Augusto Bobonis, Dean
Aida A. Vergne, Assistant Dean
Roberto Estrella, Acting Director
Audiovisual Center
Rafael Ramírez and
Eulalio Torres, Representatives
of the Department of Education

Consultants

Herbert Schueler, Director of Teacher Education, Hunter College, New York City
Harold E. Wigren, Educational Television Consultant, N.E.A.
Walter Stone, Office of Education, Washington, D.C.

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UNIVERSITY OF PUERTO RICO
College of Education

A SURVEY TO DETERMINE THE FEASIBIILITY AND DESIRABILITY OF USING TELEVISION AS AN INSTRUMENT FOR THE IN-SERVICE EDUCATION OF TEACHERS

I. *The present situation*	I. A
A. Number of teachers needing additional education: (1) provisional teachers (2) licensed teachers	Reports and other published data — *Report No. 1, To the Secretary of Education: Toward Comprenhensive Educational Planning in Puerto Rico*, by Beresford L. Hayward, 1958. — Last Annual Report of the Secretary of Education. — Statistics and data collected by the Planning Committee of the College of Education, University of Puerto Rico. Consultations — Head and Staff of the Division of Personnel, Department of Education. — Head and Staff of the Division of Statistics, Department of Education.

- An estimate of the number of non-fully qualified teachers who annually enter the public school system. All data collected should be classified according to the number of both elementary and secondary teachers, their specialization, and the number of special subject matter teachers e.g. English, Health, Industrial Arts, etc.

B. Specific needs of provisional teachers — I B

- Form to be distributed to provisional teachers from which information may be gathered as to the courses they need in order to complete the appropriate university requirements and/or to qualify as licensed teachers in the Puerto Rican Public Schools System.
- Authorization by the Secretary of the Department of Education for the gathering of information directly from public schools personnel.

C. Adequacy of present programs and resources directed to fulfill these needs.

I C

- — Questionnaire items whereby teachers may indicate the number of college credits they normally complete yearly.
- — Catalogues and programs of study of the various Puerto Rican colleges and universities.
- — Communication with Heads of Department of Universities and colleges to find out what plans they have for increasing educational services during the next five years.

D. Extent of sufficiently qualified personnel in colleges and universities.

ID

- — Information from the Division of Personnel of Universities.
- — Interviews with Deans of colleges and universities
- — Inquiry from proper authorities if funds are available and sufficient to meet present and future demands.
- — Estimate of the approximate lentgh of time it would take to meet these (the forementioned) demands using present and projected future resources.

II. *The potentiality of the use of TV to provide in-service programs for teachers*	
A. To what extent the following needs can be satisfied by means of TV programs:	
(1) Keep present teachers abreast of the most recent advancements and/or techniques in their fields of specialization or allied subjects (Science, Mathematics, English, Spanish, etc.).	II A 1 — Assistance of selected professors, teachers and supervisors to prepare a list of advancements in subject matter and techniques which they feel teachers in service know. On the basis of this list, a form would be prepared and distributed among representative sample of teachers in service in which they will indicate the areas or subjects needed and their opinions as to the desirability of these materials being presented to them via TV.
(2) Fill in gaps in general and professional education of licenced and provisional teachers.	II A 2 — Analysis of the finding of section I of the Study.

(3) Meet teachers' day by day problems in the conduct of their profession.	II A 3 — Check-list of school problems most commonly met by teachers, e.g. classroom management, meeting individual differences, etc. — Selection of a representative sample of teachers to be given questionnaires. — Study of available literature to discover how TV has assisted in meeting these problems.
B. To what extent are present resources—human and material—sufficient and available to establish TV programs designed to meet these needs. (1) Production a. Available manpower, facilities, and appropriate air time in the WIPR-TV and other stations that may join the project. b. Available manpower—television instructors, producers, directors, script writers etc.— in universities and colleges.	II B 1 — Interview with director and personnel of the WIPR-TV station. — The assistance of a technical consultant to assemble information on the technical needs and costs of production of TV programs. Determination of availability in schools and universities of the following personnel needed for the production of professional TV programs: professors who are authorities in various fields, professors with known dramatic ability and telegenic personalities, script writers, directors, other talent.

(2) Reception

a. Availability of coordinators in local communities to direct discussion and innterpretation of televised programs.

b. Availability to teachers of television sets either private or institutionally owned.

C. To what extent will additional resources—human and material—be needed to properly produce, coordinate, and guide in the use of the TV programs.

(1) Production

a. Need for supplementing existing remote facilities for television classes directly from schools.

II B 2

— Inquiry of school superintendents as to the number of TV sets either privately or institutionally owned available to teachers in their districts: condition, size.

— Inquired from proper authorities as to plans to supply TV sets to schools.

— Availability of zone supervisors and teachers whose services could be used for leading discussion groups based on TV programs.

II C

— Analysis of all data gathered; determination of conclusions and recommendations.

b. Possibility of equipping one or more local schools, and/or universities with TV facilities adequates in quality for the presentation of professional TV programs.

Need for additional manpower and training of new personnel in production, direction, script-writing, and instruction on camera.

(2) Reception

a. Need for additional TV sets to be centrally placed in local school systems for the use of groups of teachers.

b. Need for additional personnel and their training in coordinating and leading discussion and workshop groups organized for instruction by TV in local school districts.

Anticipated problems

I. *Acceptance*
How can the professional TV programs find acceptance among teachers, supervisors, colleges and universities, and the Central Office of the Department of Education.

A. By what means can teachers, supervisors, college or university personnel be involved as participating and contributing members of such TV productions:

  (1) Participation in planning

  (2) Participation in conduct and organization of study groups based on TV programs

  (3) Participation in evaluation

B. What practical professional inducements may be offered teachers participating in these TV programs.

  (1) college and university credit for courses taken via TV

  (2) credit toward special certificates or diplomas for teachers successfully completing programs of courses via TV.

  (3) Exemption from registration fees for teachers taking courses via TV.

C. What practical means of recognition and compensation are necessary for professional personnel participating in the production of TV programs.

(1) As part of the regular duties of a teacher or professor

(2) In addition to regular duties on an over-time basis

(3) As renumeration for time spent in addition to official school duties by personnel participating in these programs.

II. *Coordination*

How can be proposed TV programs be coordinated among the various agencies participating in the in-service education and supervision of teachers.

A. The Central Office of the Department of Education

B. The local school district

C. The teacher-education programs in universities and colleges

What modifications in existing policies, programs and organization in these agencies may be necessary in order to achieve proper coordination, such as:

(1) The accreditation of TV courses by the universities and colleges

(2) Adjustment of schedules in schools and in the professional responsibilities of participating teachers

(3) Adjustment of the teaching load of professors participating in these programs

(4) The acceptance of successfully completed TV courses as the equivalent of regular courses required for certification

(5) The use of zone supervisors and other qualified personnel in leading local TV groups

III *Evaluation*

A. What are the most reliable and valid ways of evaluating the effects of TV programs in the in-service education of teachers.

(1) reations through questionnaires, group conferences, interviews, etc., of participating teachers, participating supervisors and participating professors

(2) Analysis of individual teachers' achievement as a result of taking TV courses

(3) Analysis of effect of programs on improving quality of teaching, increasing the number of qualified teachers, etc.

B. What are the most practical and effective means of evaluating the individual teacher's achievements as a result of taking a course via TV.

(1) Final written examinations

a. Administered and corrected locally

b. Administered locally and corrected centrally by universities

(2) Periodic assignments, readings, reports, etc.

IV *Costs*

What additional costs—human and material—will be necessary to support TV programs for teachers on the part of:

A. The colleges and universities

B. The public school system

C. The participating TV stations

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Form TV 1 **Appendix No. 3**

UNIVERSITY OF PUERTO RICO
College of Education

This questionnaire is intended to determine the present academic preparation of teachers in active service. The results may form the basis for developing more effective means of in-service education for teachers via TV.

1. Name ______________________________

2. Home address ______________________________
No. St. Town

3. Complete name and location of school in which you teach

______________ ______________
School Town

4. Type of school - (If elementary, specify grade; if secondary, specify subject)

Elementary__________ (**check**) **grade (s)** __________ (**specify**)

Secondary__________ (**check**) **subject (s)**__________

____

____

5. License - check one: provisional________**regular**________ (**specify**)

check: elementary______ **secondary**______ **special**______ (**specify**)

6. Total number of years of teaching experience specify

7. Numuber of years working in the present type of position

____
specify

8. Type of Degree(s) or Diploma held_____________________
specify

9. Major field(s) of study or specialization________________
specify

____
specify

10. Type of professional prepartion: elementary__secondary__
check check

11. Additional courses taken: (If more space is needed please use other side)

Number of credits_______________ Field_______________
specify

Number of credits_______________ Field_______________
specify

12. If you are continuing your studies, how many credits do you normally take each year? (Including Summer Courses,

Extension Courses, etc.) ______________________________
specify

13. Have you a TV set at home? __________________________

14. If you do not have a TV set at home, can you make use of a TV set in someone's home? __________________________

15. Please rank the plans below in order of preferences (1, 2, 3, 4) as they would apply to you as possible enrollee in such courses.
(Mark 1, 2, 3, 4, in order of preference)

____ TV program viewed in groups at 4:00-4:30 pm immediately followed by group discussion at 4:30-5:00 pm.

____ TV program viewed in groups at 4:30-5:00 pm immediately followed by group discussion at 5:00-5:30 pm.

____ TV program viewed in groups at 5:00-5:30 pm immediately followed by group discussion at 5:30-6:00 pm.

____ Individual or small group home viewing of TV program at or after 10:00 pm followed by group discussion next day after school.

appendix no. 4

letters to a selected number of professors and supervisors requesting their assistance in preparing lists of: (a) recent advances in teaching techniques; (b) most recent advances in subject matter.

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Appendix No. 4

UNIVERSITY OF PUERTO RICO
College of Education

Dear colleague:

The Faculty of Education of the University of Puerto Rico is carrying out a survey in order to determine the feasibility and desirability of using television as an instrument for the in-service education of teachers. A project staff composed of Dr. Oscar Loubriel, Director and Dr. Roberto Morán, Assistant Director, has been appointed by the Dean, Dr. Augusto Bobonis, to carry out this survey. The magnitude of this study and its potential impact on future educational practices in Puerto Rico, will undoubtedly demand the cooperation of many persons in order to obtain reliable data and to arrive at conclusions from which inferences may be drawn and recommendations made.

As part of this survey, we are planning to gather information as to the present needs of teachers in active service. Therefore, we are kindly requesting the assistance of a selected number of professors and supervisors in preparing a list of recent advances in teaching techniques and of the day-today school problems most commonly met by teachers. On the basis of this list, a form will be prepared and distributed among a representative sample of teachers in active service. These teachers will indicate on this form their preferences as to the areas in which they feel television can bst serve their educational needs.

We have selected you as one of the few persons whom we would like to consult with reference to your specialization in order to obtain both reliable and useful information relevant to this survey. Naturally, the opinions of other persons with whom you like to consult will also be welcomed.

We would appreciate the opportunity of discussing this matter with you personally at your earlist convenience. Please let us know if such an arrangement can be made and at what time and place.

Your sincerely,
Roberto Morán
Assistant Director - TV Project
Faculty of Education, U.P.R.

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UNIVERSITY OF PUERTO RICO
College of Education

Dear colleague:

The Faculty of Education of the University of Puerto Rico is carrying out a survey in order to determine the feasibility and the desirabiltiy of using television as an instrument for the in-service education of teachers. A project staff composed of Dr. Oscar Loubriel, Director and Dr. Roberto Morán, assistant Director, has been appointed by the Dean, Dr. Augusto Bobonis, to carry out this survey. The magnitude of this study and its potential impact on future educational practices in Puerto Rico will undoubtedly demand the cooperation of many persons in order to obtain reliable data and to arrive at conclusions from which inferences may be drawn and recommendations made.

As part of this survey, we are planning to gather information as to the present needs of Puerto Rican teachers in active service. Therefore, we are kindly requesting the assistance of a selected number of experienced professors and supervisors, in preparing an itemized check list of the most recent advances in subject matter which the feel teachers in active service should know. On the basis of this check list, a form will be prepared and later distributed among a representative sample of teachers in active service. These teachers will then indicate on this form—by making a check—those items of greatest interest to them.

We have selected you as one of the few persons whom we would like to consult with reference to your specialization, in order to obtain both reliable and useful information relevant to this survey. Naturally, the opinions of other persons with whom you would like to consult, will also be welcomed.

We would appreciate the opportunity of discussing this matter with you personally at your ealiest convenience. Please let us know if such an arrangement can be made and at what time and place.

Yours sincerely,

Roberto Morán
Assistant Director - TV Project
Faculty of Education, U.P.R.

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appendix no. 5

sample of letters sent to various agencies, colleges, television stations, societies, and other groups, asking for names and addresses of persons with experience or/and studies in TV education programs.

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Appendix No. 5

UNIVERSIDAD DE PUERTO RICO
Río Piedras, P. R.

Colegio de Pedagogía
Oficina del Decano

17 de octubre de 1960

Estimado señor:

El Colegio de Pedagogía está realizando una investigación sobre la necesidad y practicabilidad de programas televisados como un medio más para el mejoramiento de maestros en servicio. Una fase de este proyecto consiste en localizar aquellas personas que por su experiencia en el campo de la televisión podrían ofrecernos su concurso en el planeamiento, estructuración y trasmisión de los programas.

Solicitamos de su amabilidad llene, y devuelva el cuestionario adjunto. Para su mayor comodidad le enviamos un sobre dirigido.

La cooperación que personas como usted nos presten, indudablemente será factor de importancia en el éxito o fracaso de este trabajo por lo que le adelantamos nuestro sincero agradecimiento.

Cordialmente,
Roberto L. Estrella
Director Interino
Centro Audiovisual

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appendix no. 6

questionnaire sent to more than a hundred persons, eliciting information regarding their preparation, experience and attitudes toward the proposed TV educational programs.

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Appendix No. 6

UNIVERSIDAD DE PUERTO RICO
Colegio de Pedagogía

ESTUDIO PARA DETERMINAR LA NECESIDAD Y LA PRACTICABILIDAD DE USAR LA TELEVISION COMO UN INSTRUMENTO MAS EN LA EDUCACION DE MAESTROS EN SERVICIO

Con el fin de preparar un directorio de nombres y datos de aquellas personas que por su experiencia en el campo de la televisión podrían ofrecer su concurso en la planificación, estructura, y trasmisión de programas televisados para mejoramiento de maestros en servicio, le rogamos cumplimentar y devolver este cuestionario. Favor de devolverlo a: Sr. Roberto L. Estrella, Colegio de Pedagogía, Universidad de Puerto Rico, Río Piedras, P. R.

Nombre --

Fecha y lugar de nacimiento ----------------------------

Dirección postal ------------------------------------

Preparación académica --------------------------------

Lugar donde trabaja, puesto que ocupa, y naturaleza de su trabajo: --

Otros trabajos que haya tenido:	Duración:
--------------------------	--------------------------
--------------------------	--------------------------

¿Ha tenido usted experiencia de estudio en el campo de la televisión?

Sí-------- No--------

Areas de estudio	TV Comercial	TV Educativa	Tiempo

Dé el nombre y la dirección de la Institución donde estudió.

¿Ha tenido usted experiencia en trabajo de televisión? Sí-- No--
En caso afirmativo marque la naturaleza de su experiencia:

Posición	TV Comercial	TV Educativa	Tiempo
Productor			
Director			
Escritor			
Cámara			
Talento			
Otros			

¿En qué programas de televisión ha trabajado?--------------

¿Cuáles de los siguientes recursos audiovisuales ha utilizado usted regularmente en sus programas?

Pizarra--------
Pizarra magnética--------
Feltógrafo--------
Modelos--------
Películas de movimiento------

Visitas proyectadas--------
Láminas y globos -
Láminas y dibujos--------
Mapas y globos--------
Otros--------

Si no trabaja usted en la televisión educativa, ¿qué razones ha tenido para no hacerlo? Explique

----

Cuando usted oye la frase televisión educativa, ¿qué imagen le viene a la mente? ----------------------------------

----

Nombre	Dirección (si la sabe)

appendix no. 7

memorandum and blank form sent to the superintendents of schools requesting their assistance in identifying persons with the necessary qualifications to act as coordinators.

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Appendix No. 7

UNIVERSITY OF PUERTO RICO
College of Education

September 2, 1960

A SURVEY TO DETERMINE THE FEASIBILITY AND DESIRABILITY OF USING TELEVISION AS AN INSTRUMENT FOR THE IN-SERVICE EDUCATION OF TEACHERS

To: School Superintendents (Thru the office, and with the authorization of the Secretary of Education)
From: Oscar Loubriel, Director of the project

In the event that TV courses for the in-service education of teachers are organized, we should like to ascertain the possible supply of local coordinators who would lead discussion groups based on such programs. We ask your assistance in identifying persons in your school district who, in your opinion, have the qualifications for such positions. The list of qualifications and functions given below is for your guidance in making your choices. Please list your nominations on the attached sheet.

Local Coordinators of Professional TV Courses

I. *Qualifications:*

- a. Expertness in his field or specialty.
  Note: (We are seeking coordinators who are experts in the following fields: English, Math., Science, Spanish, Social Studies, Supervision.)
- b. Expertness in modern trends in subject matter and methodology.
- c. Demonstrated ability to work with adults in a leadership capacity.
- d. Demonstrated ability to lead fruitful discussions with proper balance betwewen direction and cooperative participation.
- e. Appropriate academic training with the B.A. as the minimum.

II. *Functions:*

- a. Familiarize himself in advance with content, key questions, materials, and study guides of each TV program.
- b. Help plan and lead discussion sessions based on TV programs.
- c. Make assignments, suggest reading, etc., related to the TV course.
- e. Provide liaison with the university giving credit for the course and carry out university regulations and procedures that may be prescribed: e.g., registration, keeping attendance records, reporting student grades, etc.

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UNIVERSITY OF PUERTO RICO
College of Education

A SURVEY TO DETERMINE THE FEASIBILITY AND DESIRABILITY OF USING TELEVISION AS AN INSTRUMENT FOR THE IN-SERVICE EDUCATION OF TEACHERS

SUGGESTED DISCUSSION COORDINATORS OF PROPOSED TV COURSES FOR THE IN-SERVICE EDUCATION OF TEACHERS

Name and address	Present Position	Field, e.g. English, Math., Science, Spanish, Social Studies Supervision	Remarks

Signed ____________ School District________ Date__________

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appendix no. 8

list of names of persons with experience and/or preparation in TV educational programs

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Appendix No. 8

LIST OF PERSONS WITH SOME EXPERIENCE IN TV EDUCATIONAL PROGRAMS

A. *Script-writers*

Name	*Type of experience*
Rafael Torres Mazorana	Educational
Wilfredo Braschi	"
José A. Ayala	"
Alfredo Carlo Toro	"
Eliseo Figueroa	"
Miguel Castañer	"
Gustavo Palés Matos	"
Miguel E. López	"
Carmen E. Martínez	"
Manuel Méndez Ballester	"
Francisco Arriví	"
René Marqués	"
Madeline Willimsen	"
Salvador Tió	Educational and Commercial
Enrique Laguerre	"
Luz M. Graciani	"

B. *Producers and directors*

Alberto Zayas	"
Héctor V. Suárez	"
Angel F. Rivera	"
Efraín Berríos	Educational
Amos Rivera	"
Ottis Oliver	"

B. *Producers and directors (Cont.)*	*Type of Experience*	
Humberto García Esquivel	**Educational and**	**Commercial**
Jack Delano	”	”
Premier Maldonado	”	”
Francisco Rodríguez Pozzy	”	
Jorge Martínez Vélez	”	”
José M. Higuera	”	
José H. Rodríguez	”	
Leopoldo Santiago Lavandero	”	
Roberto L. Estrella	”	
Donald W. Keillor	”	
Rafael Dick Rovira	”	
Oscar Orzábal Quintana		”
Edmundo Rivera Alvarez		”
Mario Pabón		”
Antonio Cruz	”	
José J. Beauchamp	”	
Judith Frías de Ramírez	”	
Elín Ortiz Reyes	”	”
Rodrigo R. Rodríguez	”	
Carlos Colón Torres	”	
Francisco Toro Cardel	”	
Ivette Alsina	”	
Reinaldo Medina	”	
Gloria Modesto de García	”	
Virginia Quiñones de Gómez	”	”
Consuelo Rivera de Otero	”	”
Fernando Dennis Stevenson	”	”
Manuel Méndez Jr.	”	”

B. ***Producers and directors (Cont.)***	***Type of Experience***	
C. *Actors*		
Alberto Zayas	”	”
Angel F. Rivera	”	
Otis Oliver	”	
Miriam Vázquez Medina	”	
Adelina Arrufat de Márquez	”	
Héctor Campos Parsi	”	
Arturo Morales Carrión	”	
José H. Rodríguez	”	
Juan Ortiz Jiménez	”	
Leopoldo Santiago Lavandero	”	
Rafael Torres Mazorana	”	
Alfredo Matilla	”	
Sebastián González García	”	
Rafael Pont Flores	”	
Rafael Picó	”	
Elsie Calero de Martínez	”	
Rafael Dick Rovira	”	
José A. Ayala	”	
Alfredo Carlo Toro	”	
Eliseo Figueroa	”	
Mario Pabón	”	
Edmundo Rivera Alvarez		**Commercial**
Madeline Willimsen	”	”
Elín Ortiz Reyes	”	”
Ivette Alsina	”	”
Reinaldo Medina	”	

C. *Actors (Cont).*	*Type of Experience*
Gloria Modesto de García	"
Virginia Quiñones de Gómez	" "
Julia Santiago Cruz	"
Julio Quiñones	"
Consuelo Rivera de Otero	" "
C. *Others*	
Rafael Río Rey	"
Lorenzo Homar	" "
Rafael Cruz Emeric	" "
Luis Maizonet	" "
Carlos Colón Torres	"
Saturnino Amaral	" "
Edwin Silva Mariani	" "
Elsie Calero de Martínez	Evaluation
Rafael Ramírez	Coordination Educational Programs
Carlos Marichal	"
Manuel A. Plaud	" "
Keith Botsford	" "

LIST OF PERSONS WITH NO EXPERIENCE BUT WITH KNOWLEDGE AND PREPARATION IN TV EDUCATIONAL PROGRAMS

Name	*Area*
Josefina Navarro	Production and Acting
María Teresa Valle de Blanco	" "
Guillermo Alicea	" "
María Luisa Folch	" "
Miguel A. Plaud	" "
Lucía R. Tirado	" "
Miguelina H. de Hernández	" "
Francisco Maldonado Montalvo	" "
Gloria Modesto de García	" "
Aida M. González Paniagua	" "
Sylvia E. Rodríguez Avilés	" "
Francisca Santiago de Colf	" "
Awilda Magali Ramírez	" "
Amalia Colón Rivera	" "
Felisa García Torres	" "
Nilda Gladys Santiago	" "
Arsenio Ortíz Lebrón	" "
Antonia Cos Rodríguez	" "
Alejandro Laguna	" "
Conrad Spohnholz	" "
Roig Harris	Production and Direction
Johana Harris	" "
John Dennis	" "
John Hines	" "
Angela Gibert de Santoni	" "
Cecilia Román de Rivera	Production and Writing
Jose A. Irizarry Campos	Production and Direction
Fe Acosta de González	" "
Jorge Luis Morales González	" "

OTHER PERSONS WITH NO PARTICULAR AREA BUT WITH GENERAL PREPARATION

Gloria M. Carreras	Production and Direction
Irwin Fernández Pabón	” ”
Jorge M. Inserni	” ”
María V. Cruz de Lara	” ”
Josué Matos Nieves	” ”
Tomás Quiñones	” ”
Encarnación Serrano	” ”
Ixia Sifonte	” ”
Nélida Simmons	” ”
Minie Roses de Hernández	” ”
Rosael Zayas Torres	” ”
Rosa Sánchez Hernández	” ”
José Ortiz Vázquez	” ”
Francisco M. Rivera Pagán	” ”
María Antonia Ruíz	” ”
Jacobo Cardona	” ”
Juan Miranda Alfonso	” ”
Rafael Vicéns	” ”
Maricusa Ornés	” ”
José Luis Torregrosa	” ”
Raúl Nacer	” ”
Angeles Rodríguez	” ”
Patricia Ramírez	” ”
Teresa Mercado	” ”
Ramón Colón Torres	” ”
Clara L. de Sandra	” ”
Magdalena Ferdinandi	” ”
Vilma Carbia	” ”
Luis Alberto Negro	” ”
Pablo Cabrera	” ”
José A. González Saldaña	” ”
Ana Ebelio García	” ”
Nilda Boada	” ”
Daniel Martínez	” ”
Manuela Pizarro	” ”
Julio Flores Lugo	” ”
Bernardo Fiol Villalobos	” ”
Nora E. Soto	” ”
Ileana Badillo	” ”
Carmen García de Torres	” ”
Consuelo Q. Juarbe	” ”
Jacobo Jaime Cardona	” ”

LIST OF SUGGESTED NAMES OF PERSONS TO WORK AS COORDINATORS

Name	*Area*	*Town*
Angela Colón	Social Studies	Jayuya
Ana L. Marchand	Supervision	"
Orlando Orama	Natural Science	"
Lillian Roa	Spanish	"
Santos M. Santana	English	"
Nilda Aulet	Supervision (Health)	Luquillo
José D. Lugo	Supervision (English)	"
Lydia O. de Lebrón	Supervision (English)	"
Ascensión R. de Lorenzana	Supervision	"
Román Avilés López	English	Humacao
Rumaldina M. de Busó	Supervision	"
Oliva Figueroa de Ortíz	English	"
Idali Maldonado de Rollins	Health	"
Antero Solís Lazú	Supervision	"
José M. Torres	Social Science	"
Leslie M. Wilson	Science	"
Oscar Arana	Science	Guaynabo
Ramonita Solís	Spanish	"
Francisco J. González	"	Comerío
José J. Carrasquillo	"	"
Juanita Barroso	"	"

Angel Rivera Otero	Supervision	Orocovis
Ramón Meléndez Colón	”	”
José A. Caraballo Bastides		Maricao
Roberto Brunet		”
Catalino Curet	Spanish	Guayama
José A. Pomales	Science	”
Pedro Ledée Ortiz	Supervision	”
Julio Paler	Supervision	”
Angélica Rodríguez		Vega Alta
Efraín Martínez Sandín		”
Andrea Figueroa de Seijo		Maricao
Betty P. Ferrer	Supervision	Río Grande
José D. Lugo Pagán	English	”
Manuel Nieves Díaz	Supervision	”
Luis A. Medina Pérez	Science	Quebradillas
Aurea F. Diaz		Gurabo
Manuel R. Lluveras	Supervision	”
María C. Loubriel	”	”
Enrique Billock	”	Sabana Grande
Josefina M. de Irizarry	”	”
Virginia Pérez	”	”
Rafael Oyola Carrasquillo	”	Cidra
Aida L. Pérez de Rodríguez	”	”
Carolina C. de Martínez	”	”
Jacobina de León	Supervision (Music)	Yabucoa
Angel Ortiz	English	”
Antonio Medina	Coordination-Science	”
Julia Delgado	English	”

Federico Mathew	Supervision	Yabucoa
Juanita Serra	Supervision	"
Ramón Quiñones	Supervision	"
Juan Francisco Gómez	Production and Coordination	"
Rafaela Carrión de Rafucci	English	Rincón
Avelino Guzmán	Mathematics	"
Antonio Hernández G.	Supervision	"
Hilda Nieto de Guzmán	Science	"
Amador Marcano	Spanish-Social	Toa Baja
Sixto Nieves Pérez	Studies	"
Rubén D. Rodríguez	Supervision	Naranjito
Rubén E. Vega	Supervision	"
Rosa González Martínez	English	Lares
Ana Mercedes Delgado	Supervision	"
Mariano Reyes Cuevas	Supervision	"
Manuel Morales Sáez	Supervision	"
Roberto Tirado	Supervision	"
Hilda Torres	Social Studies	"
Rosa González Olmo	Supervision	"
Aurea Rivera	Supervision	"
Francisco de León Sáez	Supervision	Santa Isabel
Nora C. Algarín	Supervision	"
Ada Martínez Blanco	Supervision	"
Justo D. Barea Agrait	Spanish	"
Víctor Zayas Pedrogo	Supervision	"
Félix L. Vázquez Ayala	Supervision	"
Esperanza Franceschi	Supervision	"

Orlando Ortíz	**Supervision**	**Santa Isabel**
Getulio Fuentes	**Social Science**	**”**
Ana Cedeño	**English**	**Aguadilla**
Ana Javariz	**Science and Math. Supervision**	**”**
Ismael Vega	**Spanish**	**”**
Nelson Rochet	**Science**	**”**
Andrés Calderón	**Supervision**	**”**
Leonor González de Cerezo	**Supervision**	**”**
Rubén Lugo Santana	**Social Studies**	**Ceiba**
Josefina García	**Science**	**”**
Dora G. Matos	**Science**	**”**
Aida Esther Meléndez	**English**	**”**
Víctor Poupart Santos	**Mathematics**	**”**
Luz E. Sandoval	**English**	**”**
Zulma Bush	**Supervision**	**Caguas**
Guillermo Torres	**Supervision**	**”**
María Luisa Varona	**Supervision**	**”**
Alicia Díaz	**Supervision**	**”**
Haydée C. Aponte	**Supervision**	**”**
Manuela Biblioni	**Supervision**	**”**
Dolores Pedraza	**Supervision**	**”**
Nemesia R. de Jiménez	**Supervision**	**”**
Conchita M. Perales	**Supervision**	**”**
Providencia López	**Supervision**	**”**
Nereida Alicea	**Supervision**	**”**
Juanita Rodríguez	**Supervision**	**”**
José López Rodríguez	**Supervision**	**”**

Pedro Millán Rivera	Supervision	Caguas
Rafael Segarra	Spanish	”
Gloria E. Burgos	Spanish	”
Blanca L. Villalobos	Spanish	”
Pedro F. D'Acosta	Supervision	”
Laura Badillo	Supervision	Arecibo
Bernardina M. García	Science	”
Sergio Laureano	Social Studies	”
Antonio Rodríguez	Social Studies	”
María A. Diez de Pagán	Mathematics	”
Carmen M. Martínez de Torrado	Social Studies Mathematics	”
Ana R. Medina	Supervision	”
Ana J. Ríos	Audio-Visual	”
Nilda Martí	Education	”
Betty Acosta Debién	Supervision	”
Natividad Rodríguez	Social Studies	”
Ilia Rivera	Spanish	”
Anisia Beatriz Quiñones	Science	”
Santiago Maldonado	Supervision	”
Fernando González	English	”
Teodoro Rivera	Mathematics	”
Elí E. Martínez	Science	”
Juanita Ramírez	Spanish	”
Ana Celia Cortés	Social Studies	”
Gloria Vázquez	English	”
Edna Alemañy	Mathematics	”
Cándida Pagán del Río	Science	”
Ana Salazar	Social Studies	”

Rosario Yordán	English	Guayanilla
Carmen Pagán	English	”
María Luisa Rivera	Mathematics	”
Ranulfa Yordán	Mathematics	”
Johnny Ortiz Rivera	Science	”
Luis M. Licigaro	Spanish	”
Herminio Arzola	Supervision	”
Lillian Rivera de Colón	Supervision	”
Mariano Ayala	Science	”
Esperanza Yordán	Soc. Studies	”
William Ortíz	Soc. Studies	”
Isabel Santiago López	Supervision	Guánica
Francisco Flores	Supervision	”
Amparo Alberdeston	Mathematics	”
Anabel Torres	Spanish	”
Matilde Torres	Math., Soc. Studies	”
Carmen L. Núñez	Spanish	”
Alicia Rodríguez	Social Studies	”
Elsa Couto	English	”
Beatriz Ayala	Supervision	”
Alfredo Matienzo	Social Studies	Fajardo
Maximino Pérez Colón	Spanish	”
Virgenmina V. Zalduondo	Supervision	”
Carmen López Cepero	English	”
Ramona M. de Conde	Mathematics	”
Lydia E. Sánchez	Science	”
Elisa Hernández Fragoso	Science	”

Andrea Rivera	Supervision	Ciales
Carmen M. Molina	English	»
Virginia Colón de Diez	Supervision	»
Miguel Nieves Arce	Supervision	»
Ana Aponte de Collazo	Supervision	»
Victoria Cartagena de	Supervision	Cayey
Morales	Supervision	»
Consuelo Rivera de Benet	English	»
Francisca Suárez	Arithmetic	»
Ana D. Maldonado	Music	»
Emma Vila	Art	»
Miriam Anduze	English	Camuy
José J. Avila	Science	»
José Jiménez	Social Studies	»
Ramón Pérez Miranda	Principal	»
Juan H. Acevedo	Mathmatics	»
Jorge L. Chaar	Supervision	»
Pedro de Jesús	Audio-visual Education	»
Ana Medina de Mártir	Spanish	Cataño
Maria C. Morales Arrieta	English	»
Lucila M. de Fernández	Social Studies	»
María Luisa Santana	Science, Math.	»
Pedro J. Arroyo Rosado	Social Studies	Peñuelas
Adalinda Ayala	English	»
Ramón Luis Díaz	Mathematics	»
Mariano Ayala	Science	»
Elsa Pacheco	Science	»

Josefina M. de Bernier	English	Patillas
Otilia Ortíz Colón	Supervision	"
José Quiñones Casanova	Supervision	"
Carlos Rosado	Supervision	"
Rosa M. Olazagasti	Supervision	"
Ramón A. Vázquez	Supervision	"
Carlos Alverio Pimentel	Supervision	Morovis
Eledis D. del Rio	Science	"
William Ocasio	Social Studies	"
Rita A. Jusino	Spanish	"
Nicolás Torres Hernández	Science and Math.	"
María D. Cruz de Rosario	Social Studies	"
María M. del Pilar	Spanish	"
Carmen A. Parés	English	"
Julia Chéverez	English	"
Camilo Vallés	Supervision	Juncos
Ana L. Calenti de Ramos	Supervision	"
Lydia A. Hernández Gumá	Supervision	"
Lydia M. Cáceres de Blasini	Supervision	"
Antonia Pérez	Supervision	"
Eustaquia Figueroa	Supervision	"
Ramón Rodríguez	Supervision	Juana Díaz
Felícita Rigual	Social Studies	"
Armando Collazo	Mathematics	"
Nidia E. Ortíz	Science and Math.	"
Julia E. González	Supervision	"
Ada E. Mage	Spanish	"

Ana J. Alberdeston	English	Coamo
Martín Alvarado	Science	”
Louis Santiago	Science	”
Rosa Báez	Science	”
David González	Chemistry	”
Francisco Avilés	Spanish	”
Sixta Rodríguez de Avilés	Spanish	”
Cástula Martínez	Social Studies	”
Luis Figueroa	Social Studies	”
Felícita Díaz Roche	Social Studies	”
Luis R. Alvarado	Supervision	Villalba
Edilberto Rodríguez	Supervision	”
Digna Emanuelli	English	”
José A. Martínez	Science	”
Doel López	Spanish and Soc. Studies	”
Noemí Alvarado	Mathematics	”
Catalina Hernández	Mathematics	”
Julia Valentine	English	Yauco
Julia Román	English	”
Adela Santiago	Social Studies	”
María L. Rodríguez	Spanish	”
Rosita Paganelli	Supervision	”
Abigail Ortiz	History	”
Francisco Rivera Pérez	Supervision	Toa Alta
Julia Maldonado	English	”
Carmen M. Sotomayor	Social Studies	”
Mariana Méndez	Social Studies	”

Spanish and Science Nubia Franco

José Dávila	Supervision	„
Juanita R. de Torres		Vega Baja
Guillermo Rivera		”
Emilia Martínez		”
Miguel Alverio		”
Miguel A. Ramírez	Supervision	San Lorenzo
Emilia de la Torre	English	”
Ada Fernández	Science	”
Magali Buxó	Mathematics	”
Francisca Alicea	English	”
Néstar Hernández	Social Studies	”
Adela Torres	Spanish	”
Rafaela Reyes	Spanish	”
Edgardo Biaggi	Supervision	Río Piedras
Juan Gallizá	Supervision	”
Carlos Matienzo	Supervision	”
Marion Baltes Mercado	English	”
Jacobo J. Córdova	Spanish	”
Aida Ortíz Torregrosa	English	”
Consuelo Osorio	English	”
María L. Folch	Social Studies	”
Hortensia Reyes de Colón	Supervision	”
Rafaela Bezares Polanco	Spanish	”
Luis Riefkhol	Supervision	”
Irma Vincenty de López	Supervision	”
Luz M. González Vajiao	Supervision	”

Cándida Maldonado	Supervision	Río Piedras
Carmen Castañón	Spanish	"
María E. Torres	Supervision	"
Ana L. Díaz	Supervision	"
Angel Luis Hernández	Supervision	"
Dolores Tarrio Asuna	Supervision	Ponce
Zaida Salichs	English	"
Margarita Suárez	English	"
Luz M. Druet	English	"
Esther Renaud de Pagán	Science	"
Basilia Goglas	Supervision	"
Juanita C. de Rullán	Supervision	"
Amada Muñoz	Spanish	"
Pura C. Rodríguez	Supervision	"
Ana Quiñones	Supervision	"
Francisca Castellar	Supervision	"
Jorge A. Vázquez	Science	"
Mariana Suárez de Longo	Spanish and Supervision	"
Josefina S. de Oliver	Spanish and Supervision	"
María T. Echandía	Supervision	Aguada
Martha Delíz	Supervision (English)	"
Edna Santiago	Supervision	"
Teodora López	Supervision	"
Ezequiel Morales	Supervision	"
Pilar S. Rivera	Supervision	"
Luis Badillo	Supervision	"

Bernabé Torres Santiago	Supervision (English)	Las Marías
Héctor J. Torres Villanueva	Supervision (Health)	„
Rosita R. de Torres	Supervision	Bayamón
Virgilina O. de Lucca	Supervision	„
Catalina H. de Rodríguez	Supervision	„
Escolástica Vázquez	Supervision	„
Manuela Pizarro	English	„
María E. López	Supervision	„
Víctor M. Díaz	Social Studies	„
Pilar A. de López	Science	„
Víctor Quiñones Seda	Diversified	„
Luis Mitchell	Ocupations	„
Ramón L. Guzmán	Science	„
Sarah Dávila de Reyes	Social Studies	„
Angela B. de Negroni	Social Work	„
Iris Belén Cestero	Spanish	„
Rafael Silva Brau	Supervision	Mayaguez
Milagros G. Negroni	Supervision	„
Víctor F. Rodríguez	Supervision	„
Mildred A. de Diez	English	„
Carmen Calor Mota	Art	„
Ismael Ramos Vargas	Audiovisual Aids	„
Blanca C. Ramírez	Reading	„
Ricarte Nieves	Health Supervisor	„
María D. González	Supervision	„
Adria Vidal	Mathematics	„
Esther Hernández	English	„

Eugenio del Valle	Trade and Industries	Mayaguez
Rafaela Montalvo	Orientation	"
Josefina B. Millán	Supervision	"
Alberto Cordero	Audiovisual Aids	"
Divina Guzmán	English	"
David E. Malavé	Supervision	"
Emma Artigas	Social Work	"
María R. Abeillez	Music	"
Nereida Carbó	Biology	"
Pedro A. Diez	Spanish	"
Eneida Santiago	Distributive Education	"
Aida L. Pagán	Social Studies	"
Eduviges Vidal	Reading	"
Juan Ramón Marrero	Science	San Juan
Amanda Roche de Robles	Spanish	"
Nelly González	English	"
Paulita Mateo	Social Studies	"
Rosa Piñeiro	Spanish	"
Jesusa Merino	Spanish	"

TABLE NO. D-1

CLASSIFICATION OF THE ACADEMIC PERSONNEL OF THE PUBLIC SCHOOLS OF PUERTO RICO

(As of October, 1960—from a report of the Department of Education of Puerto Rico.)

	Provisional	Regular	Total
Elementary-School Teachers	1,143 (13.5%)	7,272 (86.5%)	8,415
Secondary-School Teachers	2,808 (47.0%)	3,157 (53%)	5,965
Supervisors	116 (10%)	1,037 (90%)	1,153
Total	4,067 (26%)	11,466 (74%)	15,533

TABLE NO. D-2

CLASSIFICATION OF THE ACADEMIC PERSONNEL OF THE PUBLIC SCHOOLS OF PUERTO RICO

(As of October, 1960—from a report of the Department of Education of Puerto Rico.)

classification of elementary-chool teachers

	Provisional	Regular	Total
Classroom teachers	533 (6.8%)	7,200 (93.2%)	7,733
Special English teachers	610 (89.4%)	72 (10.6%)	682
Total	1,143 (13.5%)	7,272 (86.5%)	8,415

TABLE NO. D-3

CLASSIFICATION OF THE ACADEMIC PERSONNEL OF THE PUBLIC SCHOOLS OF PUERTO RICO

(As of October, 1960—from a report of the Department of Education of Puerto Rico.)

classification of secondary-school teachers

	Provisional	Regular	Total
Classroom teachers	1,539	1,255	2,794
Teachers of English	550	368	918
Teachers of business education	42	176	118
Teachers of physical education	43	84	127
Visiting teachers	20	102	124
Other special secondary-school teachers	201	157	358
Teachers of home economics	152	374	526
Teachers of native handicraft	---	42	42
Teachers of industrial arts	88	368	456
Instructors in trades and industries	29	129	158
Teachers of vocational agriculture	28	95	123
Coordinators of distributive education programs	5	14	19
Coordinators of diversified occupations programs	8	14	22
Vocational registrars	3	1	4
Vocational counselors	100	76	176
Total	2,808 (47%)	3,157 (53%)	5,965

CLASSIFICATION OF THE ACADEMIC PERSONNEL OF THE PUBLIC SCHOOLS OF PUERTO RICO

(As of October, 1960—from a report of the Department of Education of Puerto Rico.)

classification of supervisors

	Provisional	Regular	Total
General supervisors	13	95	108
Supervisors of home economics	1	10	11
Supervisors of business education	1	5	6
Supervisors of trade and industrial education	3	16	19
Supervisors of industrial arts	-	8	8
Supervisors of vocational agriculture	-	10	10
Supervisors of vocational guidance	-	4	4
Superintendents	-	75	75
Assistant superintendents	-	126	126
School principals	45	524	569
Zone supervisors	39	103	142
Vocational school principals	-	18	18
Curriculum technicians	14	43	57
Total	116 (10%)	1,037 (90%)	1,153